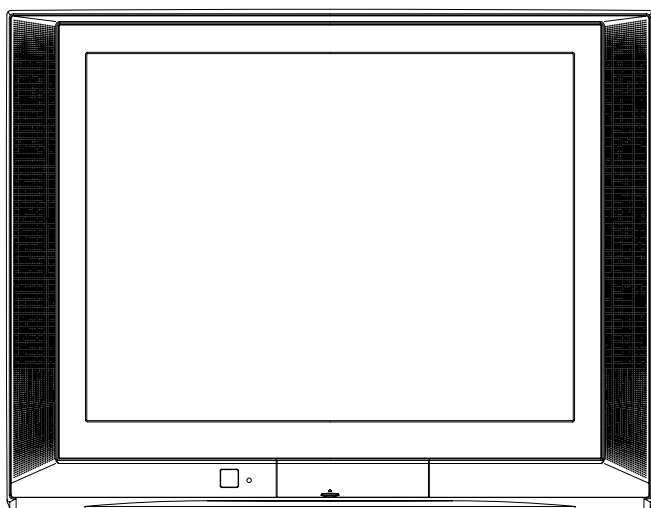


Service Manual

Color Television

Main Manual



Panasonic

Models
CT-27SC15

Chassis
CME021A

This service manual is issued as a service guide for the model listed above. Included in this manual are a set of schematic, block diagrams, functional descriptions, alignment procedures, disassembly procedures and a complete parts list.

“WARNING! This Service Manual is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. **Products powered by electricity should be serviced or repaired only by experienced professional technicians.** Any attempt to service or repair the product or products dealt with in this Service Manual by anyone else could result in serious injury or death.”

The service technician is required to read and follow the “**Safety Precautions**” and “**Important Safety Notice**” in this Main Manual.

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Important Safety Notice

Special components are used in this television set which are important for safety. These parts are identified on the schematic diagram by the symbol  and printed in **BOLD TYPE** on the replacement part list. It is essential that these critical parts are replaced with the manufacturer's specified replacement part to prevent X-ray radiation, shock, fire or other hazards. Do not modify the original design without the manufacturer's permission.

Safety Precautions

General Guidelines

An **Isolation Transformer** should always be used during the servicing of a receiver whose chassis is not isolated from AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect the Receiver from being damaged by accidental shorting that may occur during servicing.

When servicing, observe the original lead dress, especially in the high voltage circuit. Replace all damaged parts (also parts that show signs of overheating.)

Always Replace Protective Devices, such as fishpaper, isolation resistors and capacitors, and shields after servicing the Receiver. Use only manufacturer's recommended rating for fuses, circuits breakers, etc.

High potentials are present when this Receiver is operating. Operation of the Receiver without the rear cover introduces danger for electrical shock. Servicing should not be performed by anyone who is not thoroughly familiar with the necessary precautions when servicing high-voltage equipment.

Extreme care should be practiced when **Handling the Picture Tube**. Rough handling may cause it to implode due to atmospheric pressure. (14.7 lbs per sq. in.). Do not nick or scratch the glass or subject it to any undue pressure. When handling, use safety goggles and heavy gloves for protection. **Discharge the picture tube** by shorting the anode to chassis ground (not to the cabinet or to other mounting hardware). When discharging connect cold ground (i.e. dag ground lead) to the anode with a well insulated wire or use a grounding probe. Avoid prolonged exposure at close range to unshielded areas of the picture tube to prevent exposure to X-ray radiation.

The **Test Picture Tube** used for servicing the chassis at the bench should incorporate safety glass and magnetic shielding. The safety glass provide shielding for the tube viewing area against X-ray radiation as well as implosion. The magnetic shield limits the X-ray radiation around the bell of the picture tube in addition to the restricting magnetic effects. When using a picture tube test jig for service, ensure that the jig is capable of handling **50kV** without causing X-ray radiation.

Before returning a serviced receiver to the owner, the service technician must thoroughly test the unit to ensure that is completely safe to operate. **Do not use a line isolation transformer when testing.**

Leakage Current Cold Check

Unplug the AC cord and connect a jumper between the two plug prongs.

Measure the resistance between the jumpered AC plug and expose metallic parts such as screwheads, antenna terminals, control shafts, etc. If the exposed metallic part has a return path to the chassis, the reading should be between 240k Ω and 5.2M Ω . If the exposed metallic part does not have a return path to the chassis, the reading should be infinite.

Leakage Current Hot Check (Fig. 1)

Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during the check.

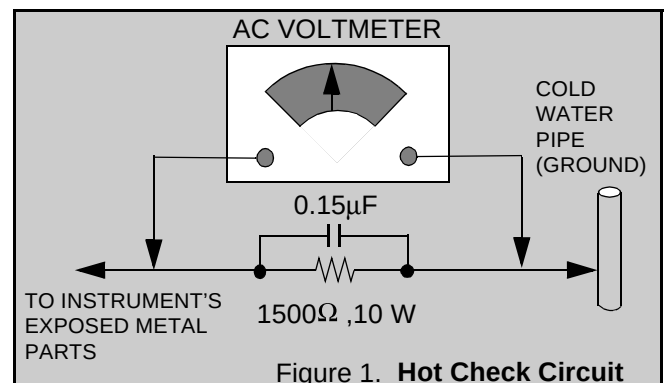
Connect a 1.5k Ω 10 watt resistor in parallel with a 0.15 μ F capacitor between an exposed metallic part and ground. Use earth ground, for example a water pipe.

Using a DVM with a 1000 ohms/volt sensitivity or higher, measure the AC potential across the resistor.

Repeat the procedure and measure the voltage present with all other exposed metallic parts.

Verify that any potential does not exceed 0.75 volt RMS.

A leakage current tester (such a Simpson Model 229, Sencore Model PR57 or equivalent) may be used in the above procedure, in which case any current measure must not exceed 0.5 milliamp. If any measurement is out of the specified limits, there is a possibility of a shock hazard and the Receiver must be repaired and rechecked before it is returned to the customer.



X-ray Radiation

WARNING: The potential source of X-ray radiation in the TV set is in the High Voltage section and the picture

Note: It is important to use an accurate, calibrated high voltage meter.

Set the **brightness and picture** controls to Minimum. Measure the High Voltage. The high voltage should be **31.0 $\pm$ 1.5kV**. If the upper limit is out of tolerance, immediate service and correction is required to insure safe operation and to prevent the possibility of premature component failure.

Service Notes

Note: These components are affixed with glue. Be careful not to break or damage any foil under the component or at the pins of the ICs when removing. Usually applying heat to the component for a short time while twisting with tweezers will break the component loose.

Leadless Chip Component (surface mount)

Chip components must be replaced with identical chips due to critical foil track spacing. There are no holes in the board to mount standard transistors or diodes. Some chips capacitor or resistor board solder pads may have holes through the board, however the hole diameter limits standard resistor replacement to 1/8 watt. Standard capacitor may also be limited for the same reason. It is recommended that identical components be used.

Chip resistor has a three digit numerical resistance code - 1st and 2nd significant digits and a multiplier.

Example: 162 = 1600 or 1.6k Ω resistor, 0 = 0 Ω (jumper). Chip capacitors generally do not have the value indicated on the capacitor. The color of the component indicates the general range of the capacitance.

Chip transistors are identified by a two letter code. The first letter indicates the type and the second letter, the grade of transistor.

Chip diodes have a two letter identification code as per the code chart and are a dual diode pack with either common anode or common cathode. Check the parts list for correct diode number.

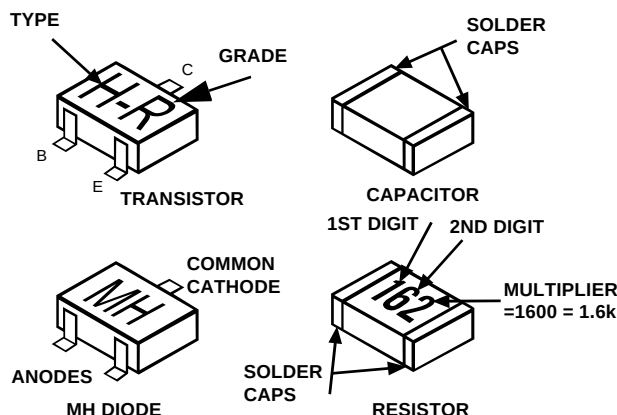
Component Removal

1. Use solder wick to remove solder from component end caps or terminal.
2. Without pulling up, carefully twist the component with tweezers to break the adhesive.
3. Do not reuse removed leadless or chip components since they are subject to stress fracture during removal.

Chip Component Installation

1. Put a small amount of solder on the board soldering pads.
2. Hold the chip component against the soldering pads with tweezers or with a miniature alligator clip and apply heat to the pad area with a 30 watt iron until solder flows. Do not apply heat for more than 3 seconds.

Chip Components



How to Replace Flat-IC

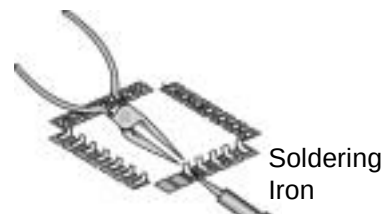
- Required Tools -

- Soldering iron
- Needle nose pliers
- Wire cutters (sharp & small)
- De-solder braids
- Magnifier

1. Cut the pins of a defective IC with wire cutters. Remove IC from board. If IC is glued to the board, heat the IC and release the IC. See Note above.



2. Using soldering iron and needle nose pliers remove the IC pins from the board.



3. Using de-soldering braid and soldering iron remove solder from affected area on board (pads).



4. Position the new Flat-IC in place (apply the pins of the Flat-IC to the soldering pads where the pins need to be soldered). Determine the positions of the soldering pads and pins by correctly aligning the polarity symbol. Solder pin #1 first, align the IC.

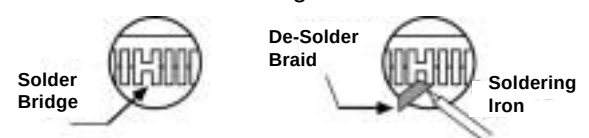


Solder the pin opposite to pin #1. This will assist positioning the IC.

5. Solder all pins to the soldering pads using a fine tipped soldering iron.



6. Check with a magnifier for solder bridge between the pins or for dry joint between pins and soldering pads. To remove a solder bridge, use a de-solder braid as shown in the figure below.



Service Notes (Continued)

IMPORTANT: To protect against possible damage to the solid state devices due to arcing or static discharge, make certain that all ground wires and CRT DAG wire are securely connected.

CAUTION: The power supply circuit is above earth ground and the chassis cannot be polarized. Use an isolation transformer when servicing the Receiver to avoid damage to the test equipment or to the chassis. Connect the test equipment to the proper ground (∇) or ($\nearrow$) when servicing, or incorrect voltages will be measured.

WARNING: This Receiver has been designed to meet or exceed applicable safety and X-ray radiation protection as specified by government agencies and independent testing laboratories.

To maintain original product safety design standards relative to X-ray radiation and shock and fire hazard, parts indicated with the symbol $\triangle$ on the schematic must be replaced with identical parts. Order parts from the manufacturer's parts center using the parts numbers shown in this service manual, or provide the chassis number and the part reference number.

For optimum performance and reliability, all other parts should be replaced with components of identical specification.

About lead free solder (PbF)

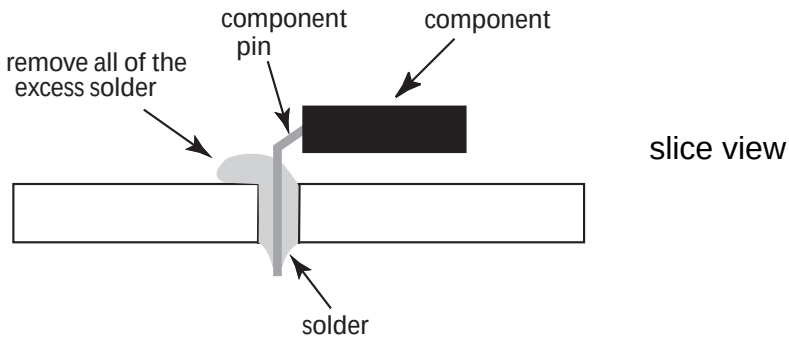
Note: Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.
The Lead Free Solder used in our manufacturing process and discussed below is Sn(Tin)+Ag(Silver)
+ Cu(Copper).

This model uses Pb Free solder in it's manufacture due to environmental conservation issues.

PCBs manufactured using lead free solder will have the PbF within a leaf Symbol  stamped on the front of PCB.

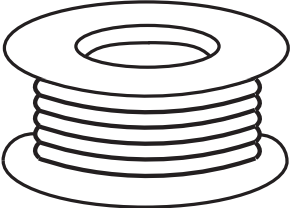
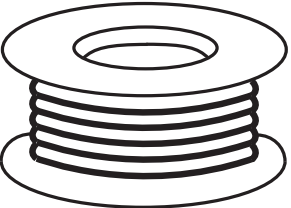
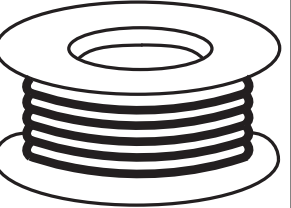
Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 30 ~ 40 °C higher. Please use a high temperature soldering iron and set it to 350 ± 5°C.
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C). If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. Although, this product can be used only Sn+Ag+Cu(tin, silver, copper) solder

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	27 inch / 676.0mmV
			CRT Type	Flat
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		2 Speaker
			Position	Front Side
			Size	2 x 4.7 Inch
			Impedance	8 ohm
		Sound Output	MAX	2.5 + 2.5 W
			10%(Typical)	- W
G-2	Tuning System		NTSC3.58+4.43 /PAL60Hz	No
		Broadcasting System		US System M
		Tuner and Receive CH	System	1Tuner
			Destination	USA(W/ CABLE)
			CH Coverage	2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate Frequency	Picture(FP)	45.75MHz
			Sound(FS)	41.25MHz
			FP-FS	4.50MHz
		Preset CH		No
		Stereo/Dual TV Sound		Yes
G-3	Power	Power Source	AC	120V AC 60Hz
			DC	
		Power Consumption	at AC	135 W at AC 120 V 60 Hz
			Stand by (at AC)	3 W at AC 120 V 60 Hz
			Per Year	-- kWh/Year
		Protector	Power Fuse	Yes
G-4	Regulation		Safety Circuit	Yes
			IC Protector(Micro Fuse)	No
			Safety	UL/CSA
			Radiation	FCC/IC
G-5	Temperature		X-Radiation	DHHS/HWC
		Operation		0oC ~ +40oC
G-6	Operating Humidity	Storage		-20oC ~ +60oC
				Less than 80% RH

GENERAL SPECIFICATIONS

G-7	On Screen Display	Menu		Yes	
		Menu Type		Icon	
		Picture		Yes	
		Normal		Yes	
		Contrast		Yes	
		Brightness		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Timer		Yes	
		Sleep		Yes	
		On/Off Timer		No	
		Sound		Yes	
		Bass		No	
		Treble		No	
		Balance		No	
		BBE On/Off		No	
		Stable Sound On/Off		No	
		Surround On/Off		No	
		AI Sound		Yes	
		Set Up		Yes	
		Language		Yes	
		TV/Cable		Yes	
		Auto CH Memory		Yes	
		Add/Delete		Yes	
		Closed Caption		Yes	
		Lock		Yes	
		V-Chip		Yes	
		Canada V-Chip		Yes	
		CH Label		No	
		Favorite CH		No	
		Game Guard(Video Lock)		Yes	
		Parental Guidance(CH Lock)		Yes	
		Color Stream DVD/DTV		No	
		Control Level		Yes	
		Volume		Yes	
		Brightness		Yes	
		Contrast		Yes	
		Color		Yes	
		Tint		Yes	
		Sharpness		Yes	
		Tuning		No	
		Bass		No	
		Treble		No	
		Balance		No	
		Back Light		No	
		Stereo,Audio Output,SAP		Yes	
		Video		Yes	
		Component		Yes	
		Channel(TV/Cable)		Yes	
		CH Label		No	
		Game Timer		No	
		Sleep Timer		Yes	
		Sound Mute		Yes	
		V-chip Rating		Yes	
		16: 9		No	
G-8	OSD Language		English French Spanish		
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min	
			Step	<u> 10 </u> Min	
		On/Off Timer	Program(On Timer / Off Timer)		No
		Wake Up Timer			No
		Timer Back-up (at Power Off Mode)	more than	--	Min Sec

GENERAL SPECIFICATIONS

G-10	Remote Control	Unit	RC-LH
		Glow in Dark Remocon	No
		Back light Remocon	Yes
		Format	Matsushita
		Remocon Format	Kaseikyo
		Custom Code	08-00 h
		Power Source	3V
		UM size x pcs	UM-3(AA) x 2 pcs
		Total Keys	38 Keys
		Keys	Power
		1	Yes
		2	Yes
		3	Yes
		4	Yes
		5	Yes
		6	Yes
		7	Yes
		8	Yes
		9	Yes
		0	Yes
		100	No
		CH Up	Yes
		CH Down	Yes
		Volume Up	Yes
		Volume Down	Yes
		TV/Caption/Text	No
		CH1/CH2	No
		TV/Video(TV/AV)	Yes
		CH RTN/CH ENT(Quick View)	Yes
		Sleep	No
		RE Call(Call)	Yes
		Reset	No
		Menu/Enter	Yes
		Mute	Yes
		Exit	Yes
		MTS(Audio Select)	Yes
		Fav.Up	No
		Fav.Down	No
		16: 9	No
		Multi Brand Keys	CH Up(VCR)
			CH Down(VCR)
			Pause/Still
			TV/VCR(VCR)
			Guide
			Prog
			FF
			Rew
			Rec
			Play
			Stop
			TV
			VCR
			Cable
			DVD
			CODE
			DVD MENU <
			DVD MENU >
			DVD CLEAR
			TOP MENU
			DVD MENU

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No
		Cable	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	Yes
		Type	USA,CANADA Type
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	Yes
		Just Clock Function	No
		CH Label	No
		VM Circuit	Yes
		Full OSD	No
		Premiere	No
		Comb Filter	Yes
			2 Lines
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		AI Sound	Yes
		FBT Leak Test Protect	Yes
		Parental Guidance (CH Lock)	Yes
		Game Guard (Video Lock)	Yes
		Game Timer (Max Time:120 Min)	No
		Energy Star	No
		Favorite CH	No
		Surround	No
		Power On Memory	No
		16:9 Mode	No
G-12	Accessories	Owner's Manual	English / French / Spanish
		Language w/Guarantee Card	Yes
		Remote Control Unit	Yes
		Rod Antenna	No
		Poles	
		Terminal	
		Loop Antenna	No
		Terminal	
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	No
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Facility List	No
		Important Safeguard	No
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	Yes
		UM size x pcs	UM-3 x 2
		OEM Brand	No
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card (NDL Card)	Yes
		PTB Sheet	No
		ESP Card	No
		300 ohm to 75 ohm Antenna Adapter	No
		Customer Care Card	Yes

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes	
				System Select	No	
				Main Power SW	No	
				Sub Power	No	
				Channel Up	Yes	
				Channel Down	Yes	
				Volume Up	Yes	
				Volume Down	Yes	
		Rear		AC/DC	No	
				TV/CATV Selector	No	
				Degauss	No	
				Main Power SW	No	
		Indicator		Power	No	
				Stand-by	No	
				On Timer	No	
		Terminals	Front	Video Input	RCA	
				Audio Input	RCA x 2	
				Other Terminal	No	
			Rear	Video Input(Rear1)	RCA	
				Video Input(Rear2)	No	
				Audio Input(Rear1)	RCA x 2	
				Audio Input(Rear2)	No	
				Video Output	No	
				Audio Output	No	
				Euro Scart	No	
				Component	RCA x 3	
				S Input	Yes	
				Diversity	No	
				Ext Speaker	No	
				DC Jack 12V(Center +)	No	
				VHF/UHF Antenna Input	F Type	
				AC Outlet	No	

G-14	Set Size	Approx. W x D x H (mm)		<u>740 x 494.5 x 575</u>		
G-15	Weight	Net (Approx.)		<u>40.0kg (88.2 lbs)</u>		
		Gross (Approx.)		<u>46.5Kg (102.5 lbs)</u>		
G-16	Carton	Master Carton		No		
			Content	---- Sets		
			Material	-- /--		
			Dimensions W x D x H(mm)	<u>-- x -- x --</u>		
			Description of Origin	No		
		Gift Box	Material	Double/Brown		
			Dimensions W x D x H(mm)	<u>850 x 620 x 665</u>		
			Design	As per Buyer's		
			Description of Origin	Yes		
		Drop Test			Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces	
			Height (cm)	25		
			Container Stuffing	<u>156</u> Sets/40' container		
G-17	Material	Cabinet	Cabinet Front	PS 94V0 NON DECABROM		
			Cabinet Rear	PS 94V0 NON DECABROM		
		PCB	Non-Halogen Demand	No		
			Eyelet Demand	Yes		
G-18	Environment	Environmental standard requirement (by buyer)		Green procurement of MATSUSHITA		
		Pb-free		Phase3(Ph		

DISASSEMBLY INSTRUCTIONS

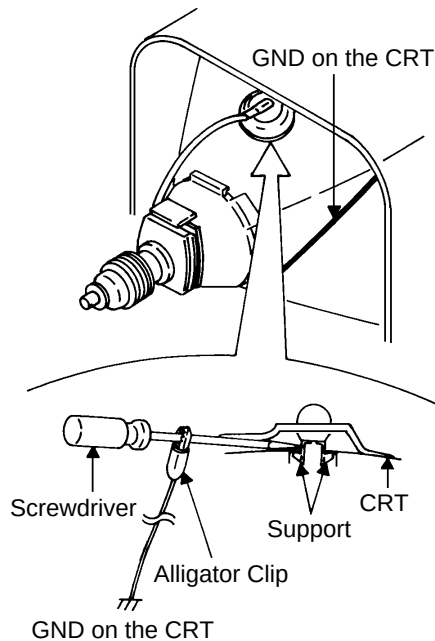
1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

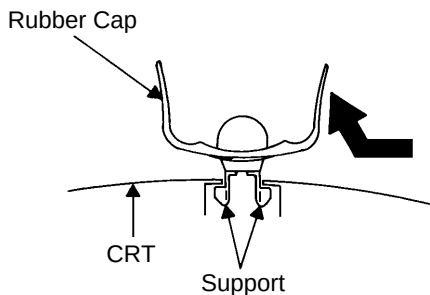
- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.



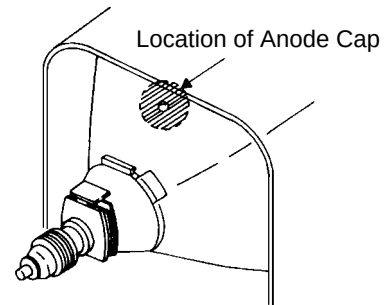
3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

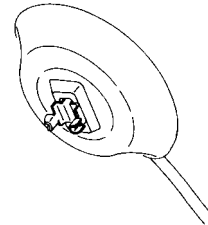
1. Clean the spot where the cap was located with a small amount of alcohol.



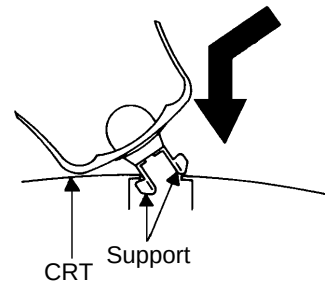
NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap.



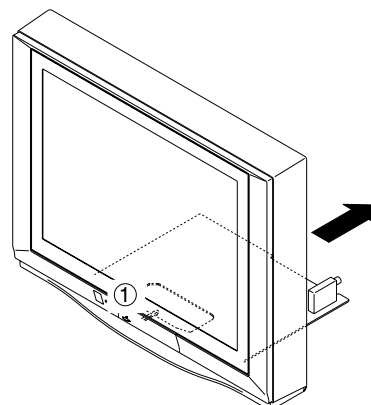
4. Insert one end of the Anode Support into the anode button, then the other as shown in the figure below.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

2. NOTE FOR THE REMOVAL OF THE MAIN PCB

When the removal of the Main PCB, remove the hook ① first, then draw it in the direction of the arrow.



SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily. To enter to the Service Mode, press both set key and remote control key for more than 2 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD and LOCK PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button (6) on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.

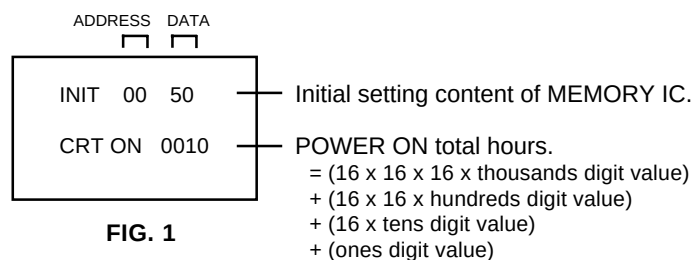


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	50	BC	0A	25	5E	B3	24	B4	B5	A8	0A	04	40	40	40	7F
10	50															

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the CH. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press VOL. UP/DOWN to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using CH. UP/DOWN button until required DATA value has been selected.
6. Pressing VOL. UP/DOWN will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.
After the data input, set to the initializing of shipping.
9. Turn POWER on.
10. While holding down VOLUME button on front cabinet, press key 1 on remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease (**YG6260M**), remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)
- **The adjustments are needed for each mode, RF mode and AV mode. Perform the adjustments referring each adjustment items.**

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button (**9**) on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

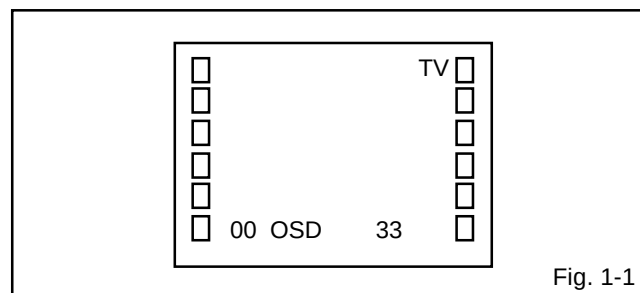


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (**0-9**) on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	19	CONTRAST CENT
01	CUT OFF	20	CONTRAST MIN
02	H. VCO	21	COLOR MAX
03	H. PHASE	22	COLOR CENTER
04	AFC GAIN	23	COLOR MIN
05	V. SHIFT	24	TINT
06	H. SIZE	25	SHARPNESS MAX
07	V. SIZE	26	SHARPNESS CENT
08	V. LINERITY	27	SHARPNESS MIN
09	VS CORRECTION	28	Cr DELAY FINE
10	R DRIVE	29	Cr DELAY FINE
11	B DRIVE	30	Cr PEDESTAL ADJ
12	R BIAS	31	Cr PEDESTAL ADJ
13	G BIAS	32	PARABOLA
14	B BIAS	33	CORNER
15	BRIGHT MAX	34	TRAPEZIUM
16	BRIGHT CENT	35	LEVEL
17	BRIGHT MIN	36	SEPARATION1
18	CONTRAST MAX	37	SEPARATION2

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set in condition is AV MODE without signal.
2. Connect the digital voltmeter to the **TP003**.
3. Adjust the **VR502** until the digital voltmeter is $135 \pm 0.5V$.

2-2: CUT OFF (RF)

1. Place the set in Aging Test for more than 15 minutes.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**01**) on the remote control to select "CUT OFF".
4. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: WHITE BALANCE (RF)

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set in Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator with Burst on.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**12**) on the remote control to select "R. BIAS".
5. Press the CH. UP/DOWN button on the remote control to select the "R. BIAS", "G. BIAS", "B. BIAS", "B. DRIVE" or "R. DRIVE".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R. BIAS, G. BIAS, B. BIAS, B. DRIVE and R. DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is achieved.

2-4: FOCUS (RF)

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

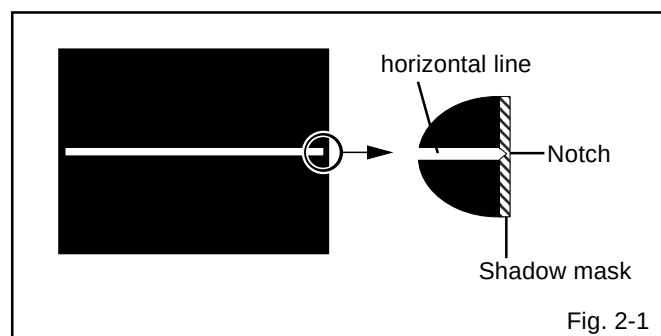
2-5: HORIZONTAL SIZE (RF)

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**06**) on the remote control to select "H. SIZE".
4. Press the VOL. UP/DOWN button on the remote control adjust the H.SIZE becomes 10 ~12%.

ELECTRICAL ADJUSTMENTS

2-6: VERTICAL POSITION (RF)

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask. (Refer to Fig. 2-1)



2-7: VERTICAL SIZE (RF)

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (07) on the remote control to select "V. SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes $9 \pm 2\%$.

2-8: VERTICAL LINEARITY (RF)

NOTE: Adjust after performing adjustments in section 2-7. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness, contrast, to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (08) on the remote control to select "V. LINERITY".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-9: TRAPEZIUM (RF)

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (34) on the remote control to select "TRAPEZIUM".
4. Press the VOL. UP/DOWN button on the remote control until the both vertical lines of the screen become parallel.

2-10: HORIZONTAL PHASE (RF)

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (03) on the remote control to select "H.PHASE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-11: LEVEL (RF)

1. Connect the AC voltmeter to pin 6 of CP101.
2. Activate the adjustment mode display of Fig. 1-1 and press the channel button (35) on the remote control to select "LEVEL".
3. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is $85 \pm 2\text{mV}$.

2-12: SEPARATION 1, 2 (RF, AV)

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=400Hz, R-ch=2KHz) and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (36) on the remote control to select "SEPARATION1".
4. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
5. Press the CH UP button once the set to "SEPARATION2" mode. Then perform the above adjustment 4.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch=Non input and receive the RF.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (36) on the remote control to select "SEPARATION1".
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF.
7. Connect the oscilloscope to the **Audio Out Jack (L-ch)**.
8. Activate the adjustment mode display of Fig. 1-1 and press the channel button (37) on the remote control to select "SEPARATION2".
9. Press the VOL. UP/DOWN button on the remote control to adjust it until the L-ch output becomes minimum. The output difference of the between with Filter and without Filter should be more than 25db for both L and R.

ELECTRICAL ADJUSTMENTS

2-13: OSD POSITION

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-2**)

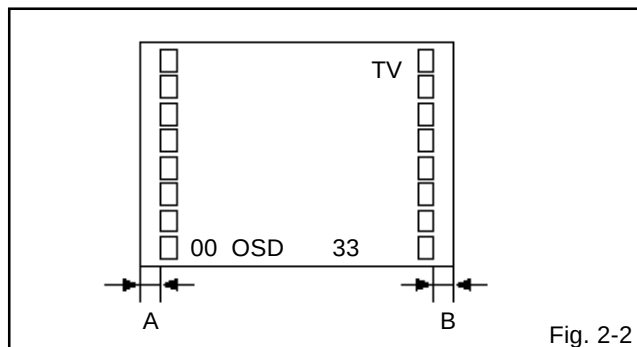


Fig. 2-2

2-14: BRIGHT CENT

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**16**) on the remote control to select "BRIGHT CENT".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% is starting to be visible.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the TV/VIDEO button on the remote control to set to the CS mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**16**) on the remote control to select "BRIGHT CENT".
9. Press the VOL. UP/DOWN button on the remote control until the brightness step No. becomes "80".

2-15: COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**22**) on the remote control to select "COLOR CENTER".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $120 \pm 10\%$ of the white level. (**Refer to Fig. 2-3**)
7. Receive the video color bar pattern. (Audio Video Input)
8. Set to the AV mode. Then perform the above adjustments 2~6.
9. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 2~4.
10. Press the VOL. UP/DOWN button on the remote control until the color step No. becomes "59".

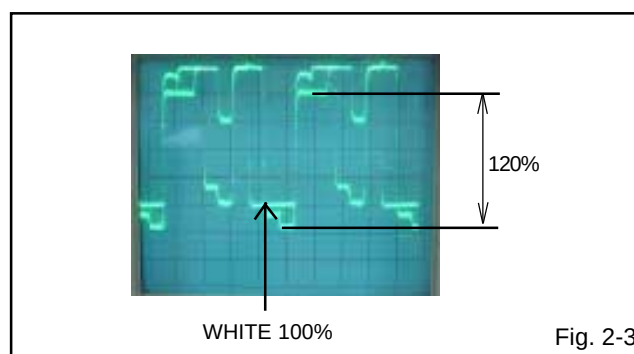


Fig. 2-3

2-16: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**24**) on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes as straight line. (**Refer to Fig. 2-4**)
6. Receive the video color bar pattern. (Audio Video Input)
7. Set to the AV mode. Then perform the above adjustments 2~5.
8. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 2~4.
9. Press the VOL. UP/DOWN button on the remote control until the tint step No. becomes "52".

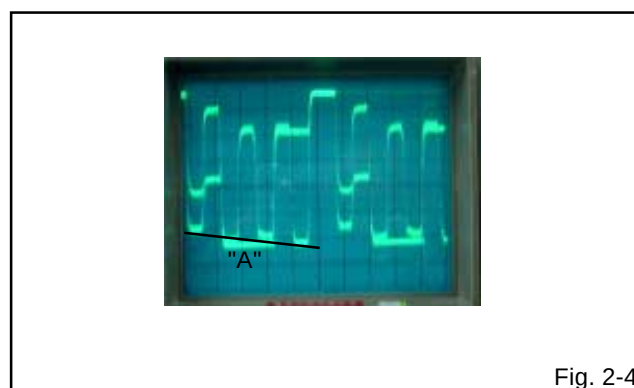


Fig. 2-4

2-17: CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**18**) on the remote control to select "CONTRAST MAX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "100".
3. Receive a broadcast and check if the picture is normal.
4. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.
5. Press the TV/VIDEO button on the remote control to set to the CS mode. Then perform the above adjustments 1~3.

ELECTRICAL ADJUSTMENTS

2-18: PARABOLA CORR (RF)

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "PARABOLA".
4. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.
5. In the case the right and left vertical lines are not straight, Please Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "CORNER".
6. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.

2-19: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV	CS
02	H.VCO	03	03	03
04	AFC GAIN	07	07	07
05	V.SHIFT	02	02	02
08	V.LINEARITY	29	29	29
09	VS.CORRECTION	30	30	30
15	BRIGHT MAX	110	110	110
17	BRIGHT MIN	50	50	50
19	CONTRAST CENT	50	50	50
20	CONTRAST MIN	10	10	10
21	COLOR MAX	90	90	90
23	COLOR MIN	00	00	00
25	SHARPNESS MAX	63	63	63
26	SHARPNESS CENT	48	48	48

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

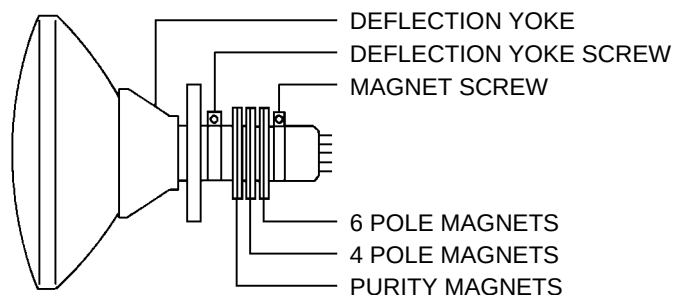


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

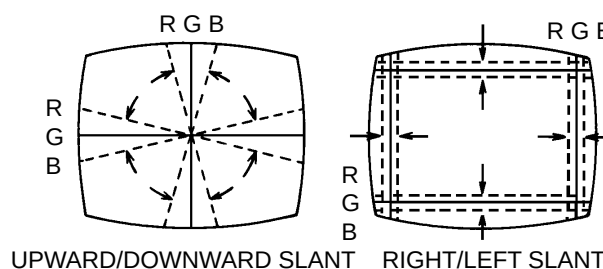
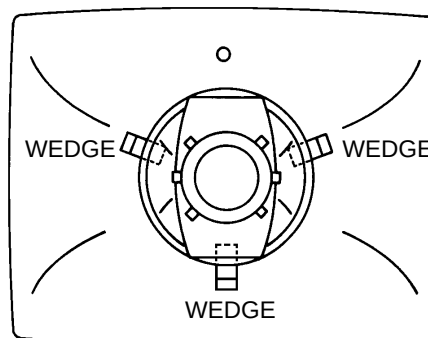


Fig. 3-2-a

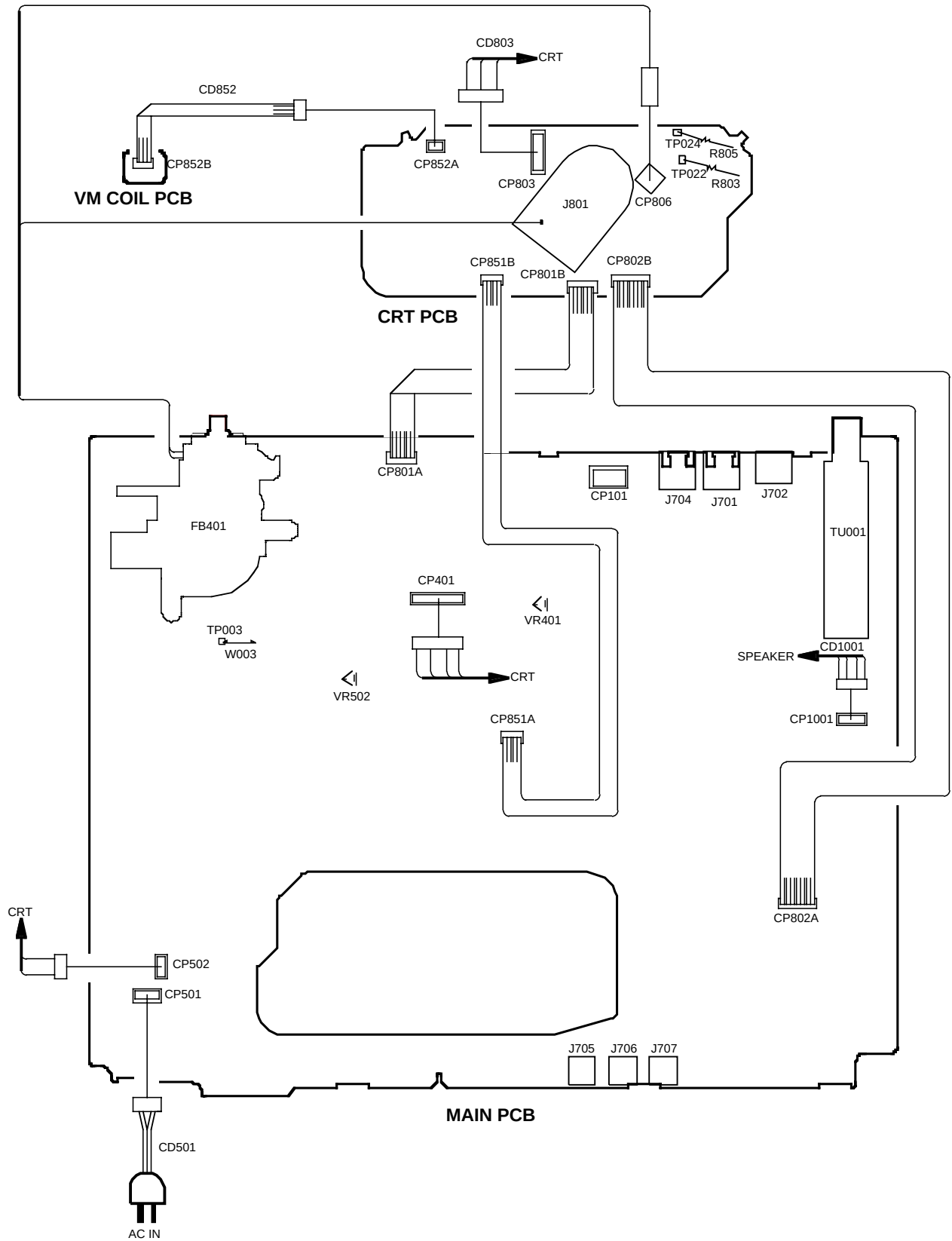


WEDGE POSITION

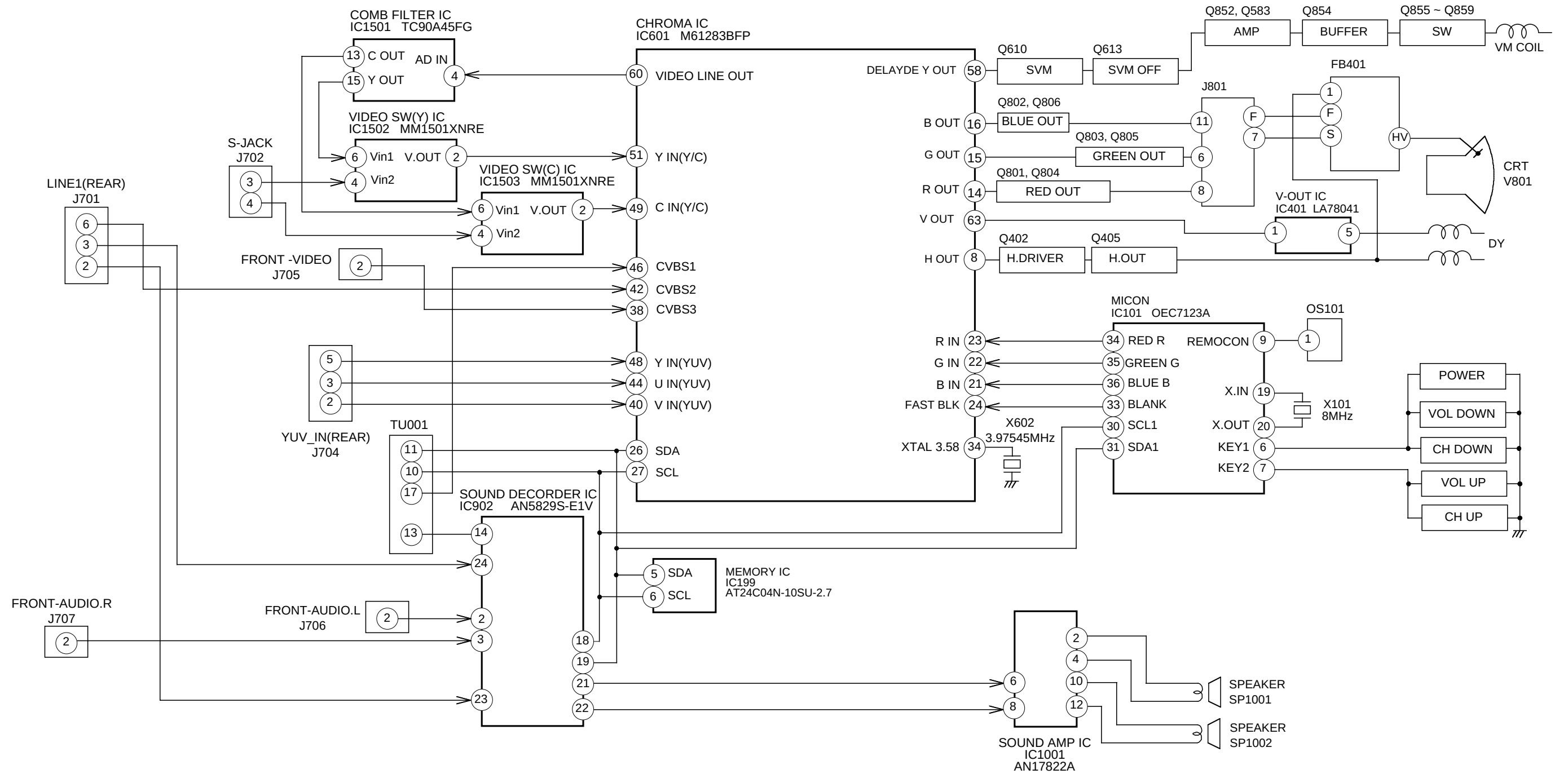
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

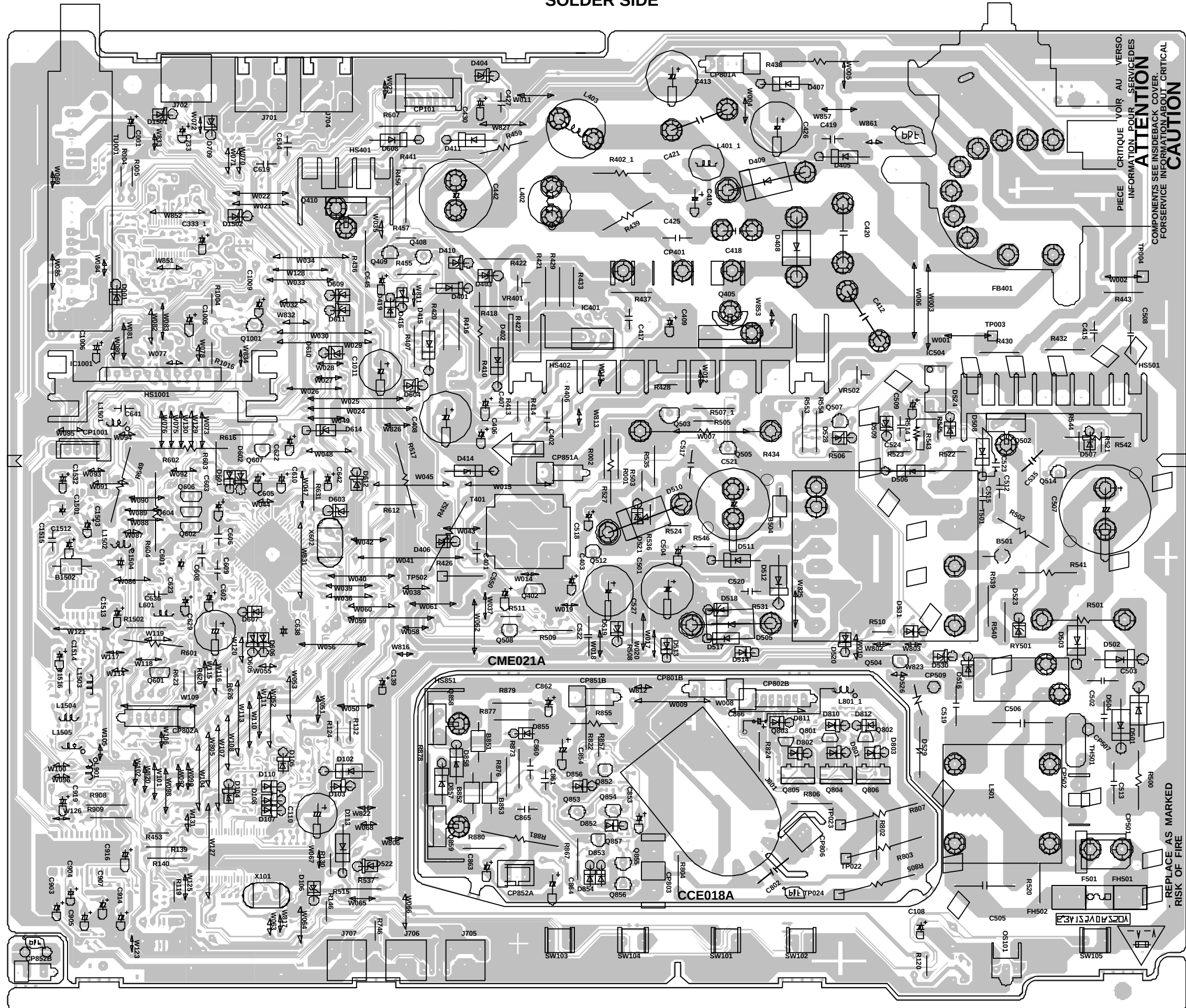
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



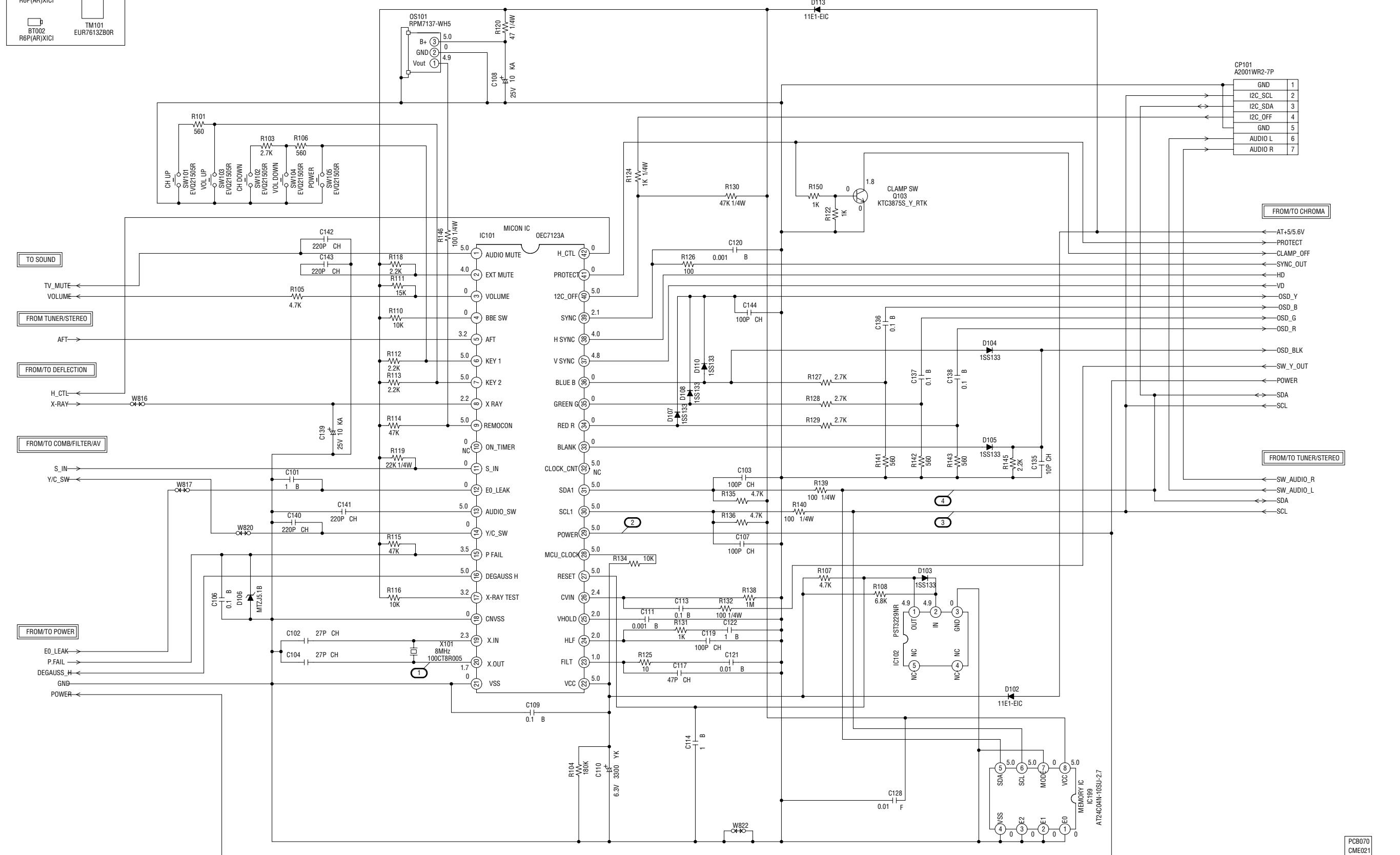
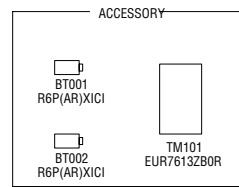
BLOCK DIAGRAM



PRINTED CIRCUIT BOARDS
MAIN/CRT/VM COIL (INSERTED PARTS)
SOLDER SIDE



MICON SCHEMATIC DIAGRAM
(MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CHROMA SCHEMATIC DIAGRAM
(MAIN PCB)

FROM/TO COMB FILTER

V_IN[YUV]
VIDEO_IN1
U_IN[YUV]
Y_IN[YUV]
VIDEO_IN3

C_V_OUT_SW
Y_V_OUT_SW
P.CON+5V
VIDEO_OUT
P.CON+8V[A]
FSC_OUT

FROM/TO TUNER/STEREO

TUNER_VIDEO
TUNER+5V
P.CON+5V

TO SOUND

P.CON+8V[A]

FROM POWER

UNREG+12V
GND

FROM/TO DEFLECTION

P.CON+5V
P.CON+8V[A]
GND
V_OUT
EW_OUT
H_OUT
H_SYNC
ABCL

FROM/TO MICON

AT+5/5.6V
PROTECT
SW_Y_OUT

POWER

SCL

SDA

OSD_BLK

OSD_R

OSD_G

OSD_B

VD

HD

SYNC_OUT

OSD_Y

CLAMP_OFF

TO CRT/SVM

CP802A (CP802B)
B2013H02-7P
P.CON+8V 1
GND(SIGNAL) 2
R.OUT 3
G.OUT 4
B.OUT 5
CLAMP_OFF 6
VM COIL 7

PCB070
CME021

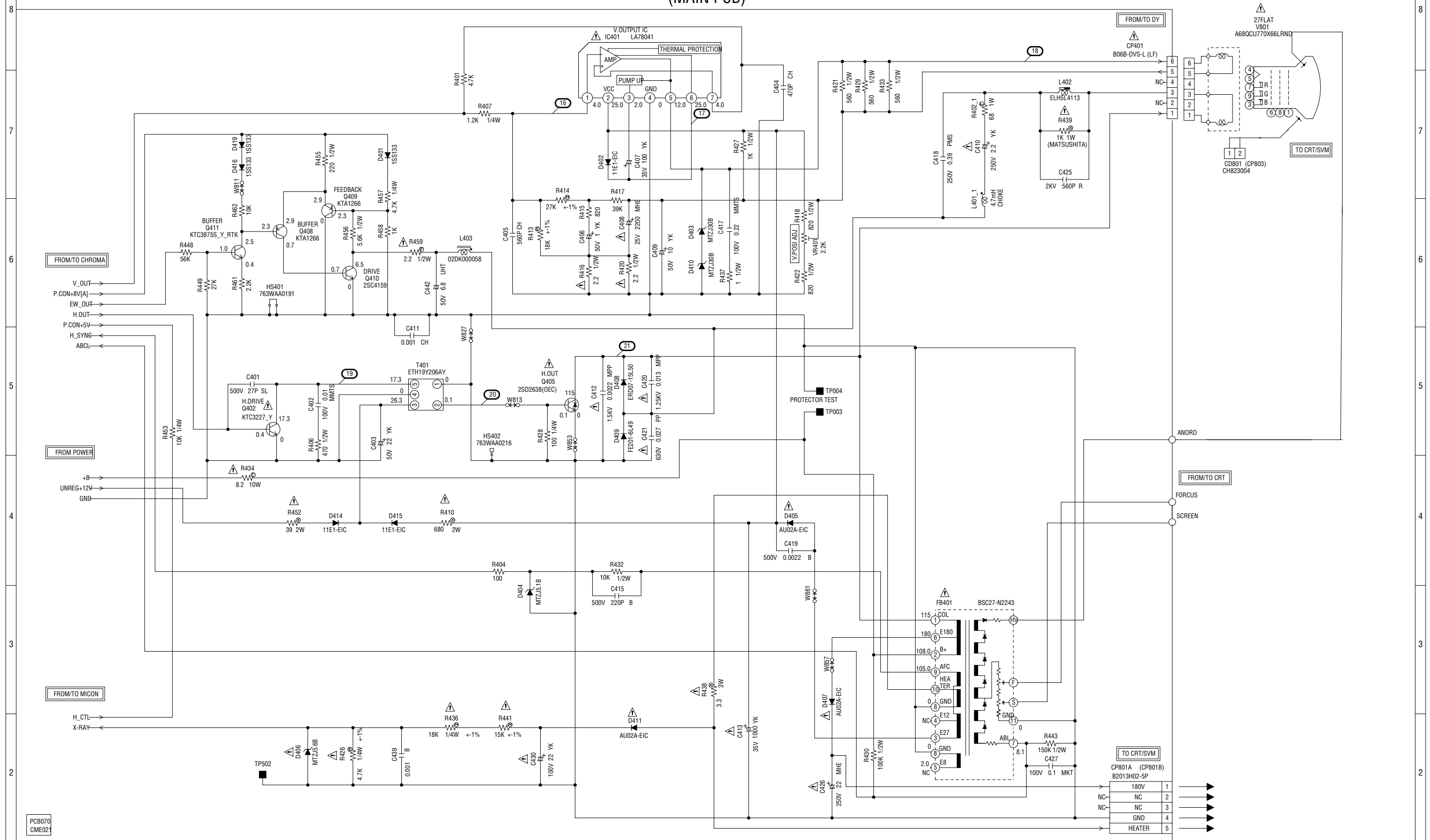
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPARÉES PAR UN  ÉTANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DÉCRITES
DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY  ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

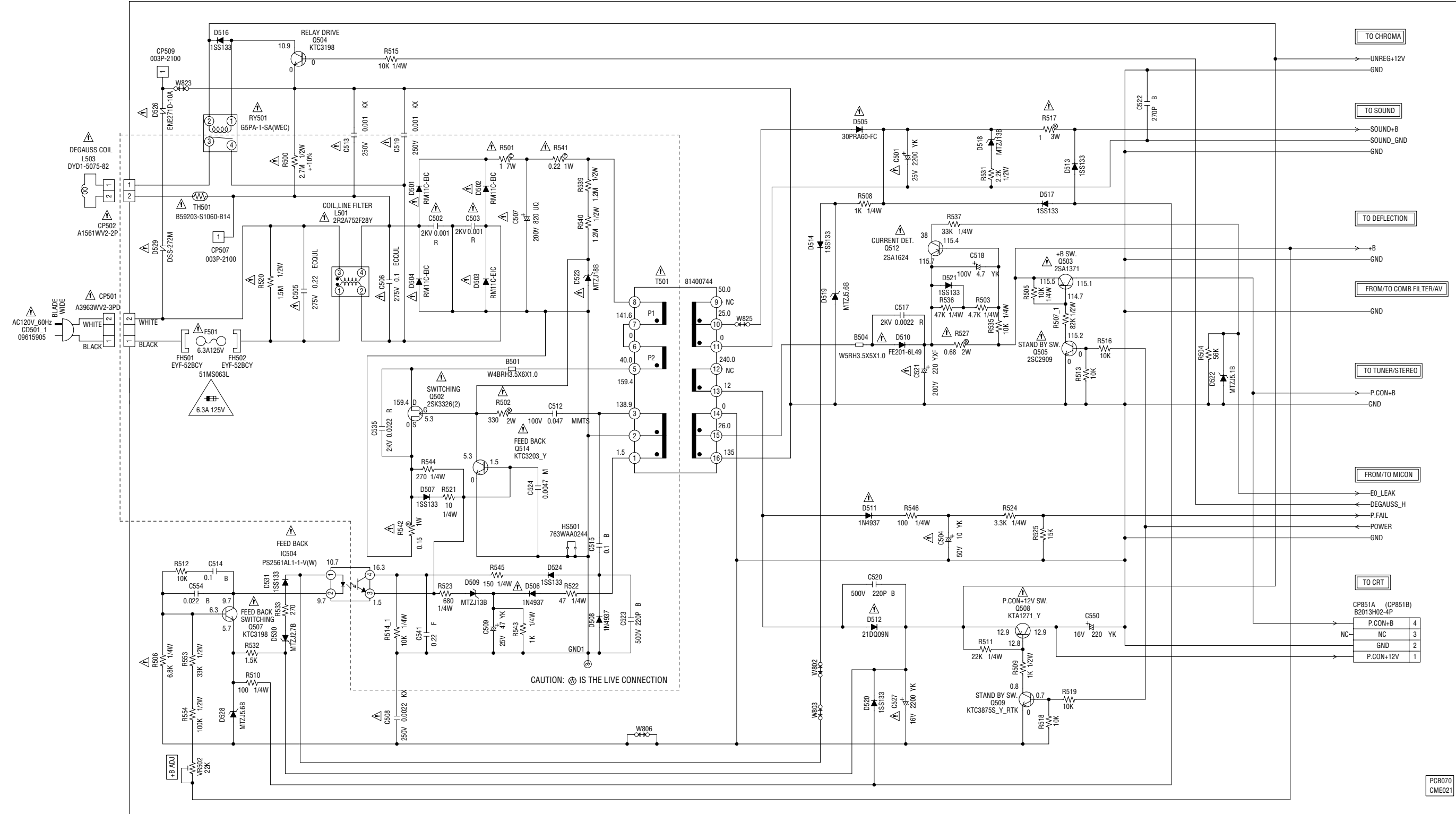
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPARÉES PAR UN [triangle symbol] ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY [triangle symbol] ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

POWER SCHEMATIC DIAGRAM
(MAIN PCB)



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 6.3A 125V(F501)

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 6.3A 125V(F501)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

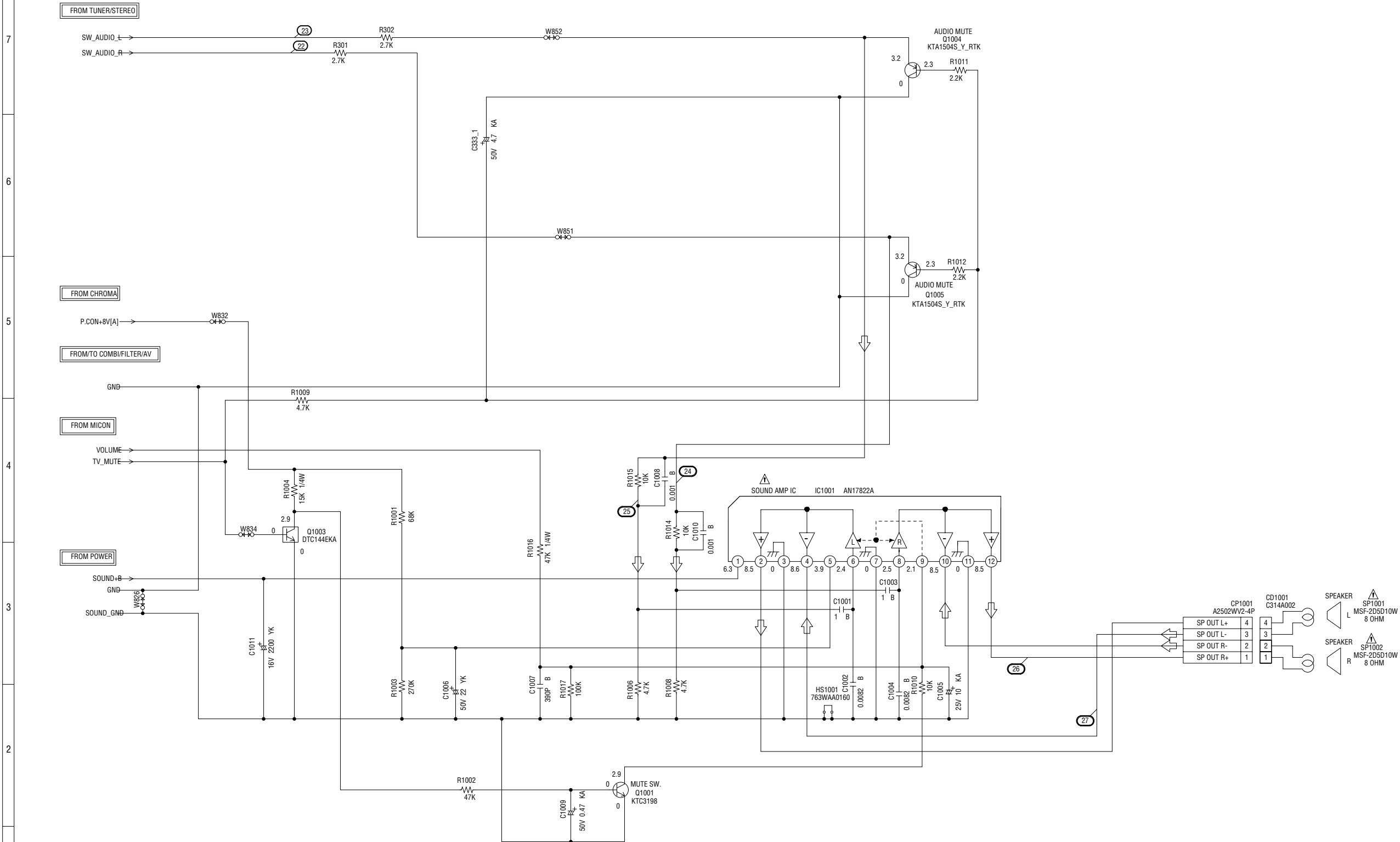
ATTENTION: LES PIECES REPARÉES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CP851A	(CP851B)
B2013H02-4P	
P.CON+B	4
NC	3
GND	2
P.CON+12V	1

PCB070
CME021

SOUND SCHEMATIC DIAGRAM
(MAIN PCB)



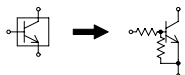
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES À UN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

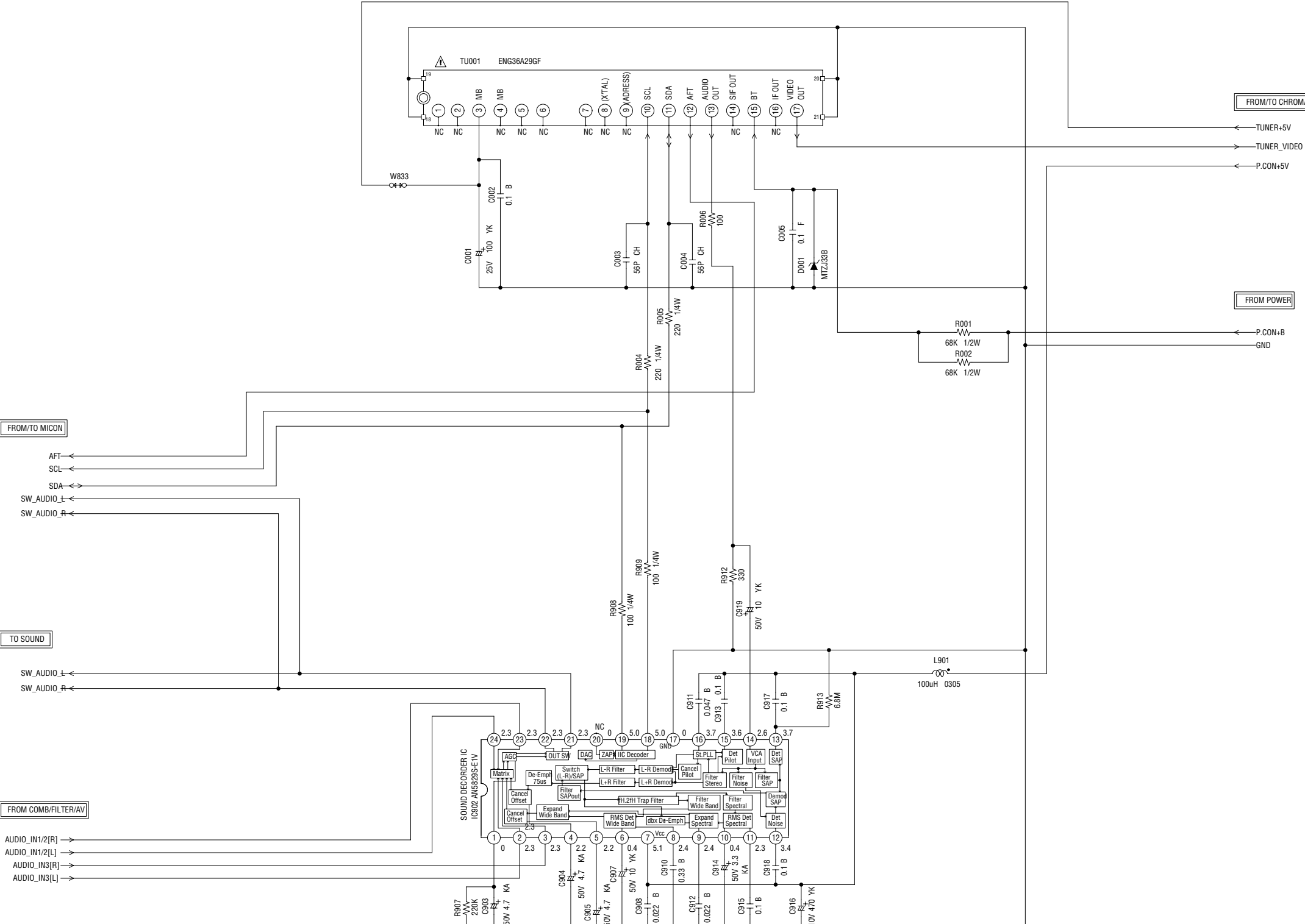
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR



PCB070
CME021

TUNER/STEREO SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

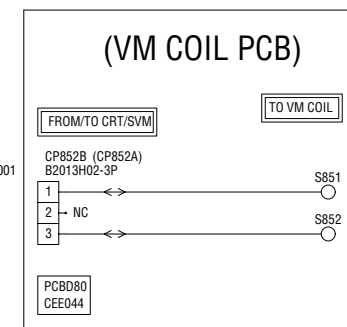
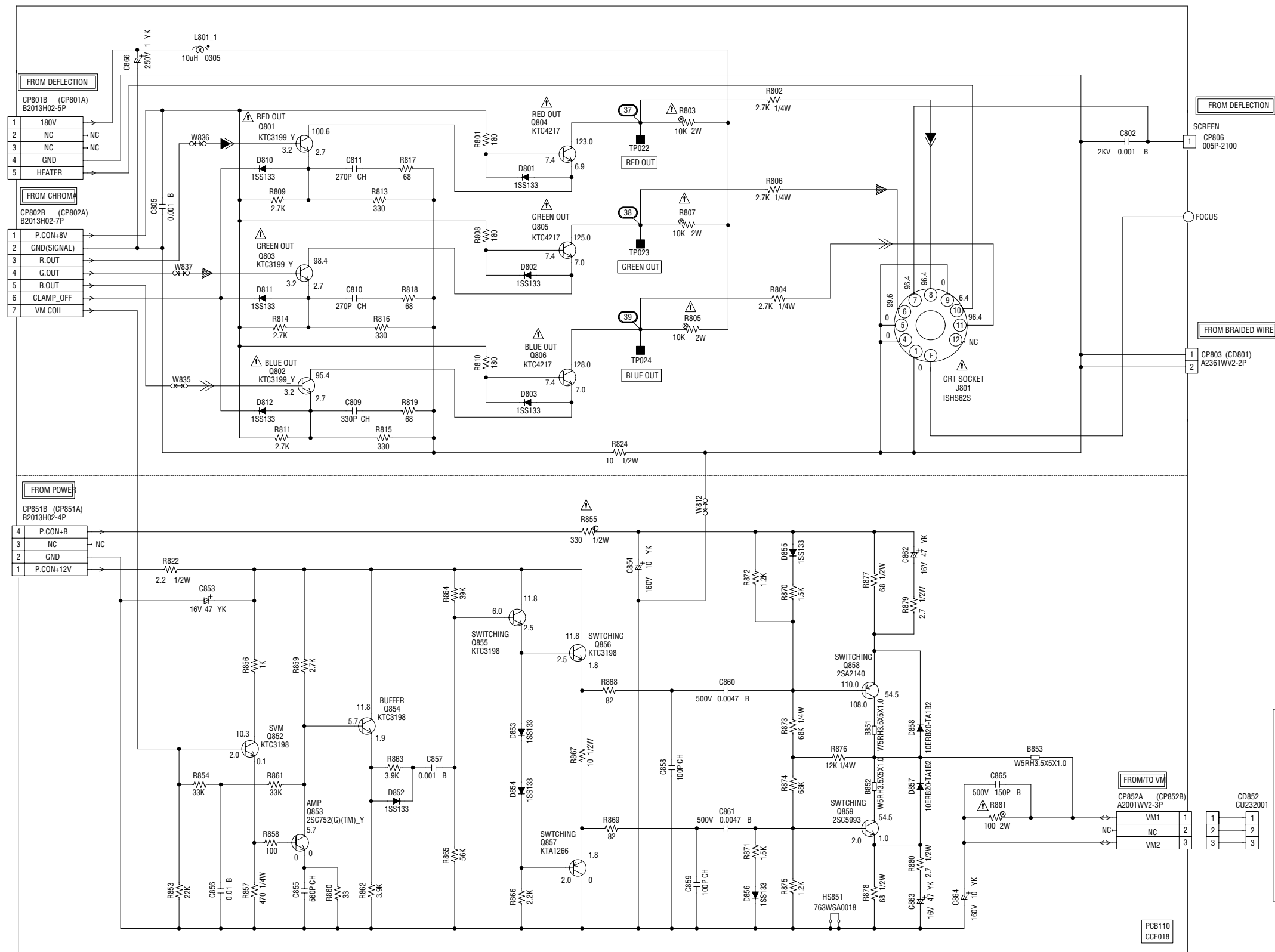
PCB070
CME021

(MAIN PCB)



◀◀ LUMINANCE SIGNAL
◀◀◀ COLOR SIGNAL
◀◀◀◀ TUNER VIDEO SIGNAL

CRT / SVM SCHEMATIC DIAGRAM (CRT PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

- ◀ R.SIGNAL
- ◀ G.SIGNAL
- ◀ B.SIGNAL

VOLTAGE LIST

IC

IC101			
Pin	Volt.	Pin	Volt.
1	5	22	5
2	4	23	1
3	0	24	2
4	0	25	2
5	3.2	26	2,4
6	5	27	5
7	5	28	5
8	2.2	29	5
9	5	30	5
10	0	31	5
11	0	32	5
12	0	33	0
13	5	34	0
14	0	35	0
15	3.5	36	0
16	5	37	4.8
17	3.2	38	4
18	0	39	2.1
19	2.3	40	5
20	1.7	41	0
21	0	42	0

IC102	
Pin	Volt.
1	4.9
2	4.9
3	0
4	0
5	0

IC199	
Pin	Volt.
1	0
2	0
3	0
4	0
5	5
6	5
7	0
8	5

IC401	
Pin	Volt.
1	4
2	25
3	2
4	0
5	12
6	25
7	4

IC601			
Pin	Volt.	Pin	Volt.
1	3.2	33	0
2	4	34	3.2
3	0	35	0
4	0	36	2.8
5	0	37	5.6
6	5.5	38	1.9
7	0	39	0
8	3.8	40	1.2
9	8	41	5
10	8	42	1.9
11	0	43	0
12	8	44	1.2
13	8	45	0
14	4	46	3
15	4	47	0
16	4	48	2.7
17	2.1	49	2.2
18	4.9	50	0
19	4.9	51	3
20	4.6	52	8.7
21	2.9	53	1.9
22	2.9	54	5.7
23	2.9	55	3.2
24	4.2	56	0
25	4.9	57	0
26	3.5	58	2.8
27	3.5	59	3
28	5	60	3
29	3.5	61	8.7
30	5	62	4
31	0	63	4
32	3.6	64	4

IC902	
Pin	Volt.
1	0
2	2.3
3	2.3
4	2.2
5	2.2
6	0.4
7	5.1
8	2.4
9	2.4
10	0.4
11	2.3
12	3.4
13	3.7
14	2.6
15	3.6
16	3.7
17	0
18	5
19	5
20	0
21	2.3
22	2.3
23	2.3
24	2.3

IC1001	
Pin	Volt.
1	6.3
2	8.5
3	0
4	8.6
5	3.9
6	2.4
7	0
8	2.3
9	2.1
10	8.5
11	0
12	8.5

IC1501	
Pin	Volt.
1	0
2	2.3
3	2.9
4	2.5
5	1.2
6	0
7	0
8	5.2
9	0
10	2.3
11	2.2
12	3.5
13	2.9
14	1.5
15	3.5
16	5.1

IC1502, IC1503	
Pin	Volt.
1	0
2	4.4
3	7.9
4	4.5
5	0
6	4.5
7	7.5
8	4.5
9	4.5
10	0
11	4.5
12	7.5
13	5
14	4.5
15	0
16	4.5

VOLTAGE LIST

TRANSISTOR

Q103	
Pin	Volt.
B	0
C	1.8
E	0

Q402	
Pin	Volt.
B	0.4
C	17.3
E	0

Q405	
Pin	Volt.
B	0.1
C	115
E	0

Q408	
Pin	Volt.
B	2.3
C	0.7
E	2.9

Q409	
Pin	Volt.
B	2.3
C	0
E	2.9

Q410	
Pin	Volt.
B	0.7
C	6.5
E	0

Q411	
Pin	Volt.
B	1
C	2.5
E	0.4

Q502	
Pin	Volt.
G	5.8
S	0
D	159.4

Q503	
Pin	Volt.
B	114.7
C	115.1
E	115.5

Q504	
Pin	Volt.
B	0
C	10.9
E	0

Q505	
Pin	Volt.
B	0
C	115.2
E	0

Q507	
Pin	Volt.
B	6.3
C	9.7
E	5.7

Q508	
Pin	Volt.
B	12.8
C	12.9
E	12.9

Q509	
Pin	Volt.
B	0.7
C	0.8
E	0

Q512	
Pin	Volt.
B	115.4
C	38
E	115.7

Q514	
Pin	Volt.
B	1.5
C	5.3
E	0

Q601	
Pin	Volt.
B	8.5
C	11.3
E	7.9

Q602	
Pin	Volt.
B	5.5
C	7.2
E	5

Q604	
Pin	Volt.
B	5.5
C	7.2
E	5

Q606	
Pin	Volt.
B	5.5
C	7.2
E	5

Q607	
Pin	Volt.
B	5.5
C	8.8
E	4.9

Q610	
Pin	Volt.
B	1.4
C	5.3
E	0.7

Q613	
Pin	Volt.
B	0
C	0
E	0

Q801	
Pin	Volt.
B	3.2
C	100.6
E	2.7

Q802	
Pin	Volt.
B	3.2
C	95.4
E	2.7

Q803	
Pin	Volt.
B	3.2
C	98.4
E	2.7

Q804	
Pin	Volt.
B	7.4
C	123
E	6.9

Q805	
Pin	Volt.
B	7.4
C	125
E	7

Q806	
Pin	Volt.
B	7.4
C	128
E	7

Q852	
Pin	Volt.
B	2
C	10.3
E	0.1

Q853	
Pin	Volt.
B	0
C	5.7
E	0

Q854	
Pin	Volt.
B	5.7
C	11.8
E	1.9

Q855	
Pin	Volt.
B	6
C	11.8
E	2.5

Q856	
Pin	Volt.
B	2.5
C	11.8
E	1.8

Q857	
Pin	Volt.
B	2
C	0
E	1.8

Q858	
Pin	Volt.
B	108
C	54.5
E	110

Q859	
Pin	Volt.
B	2
C	54.5
E	1

Q1001	
Pin	Volt.
B	0
C	2.4
E	0

Q1003	
Pin	Volt.
B	0
C	2.9
E	0

Q1004	
Pin	Volt.
B	2.3
C	0
E	3.2

Q1005	
Pin	Volt.
B	2.3
C	0
E	3.2

Q1501	
Pin	Volt.
B	0
C	0
E	0.6

Q1502	
Pin	Volt.
B	2.6
C	3.5
E	2

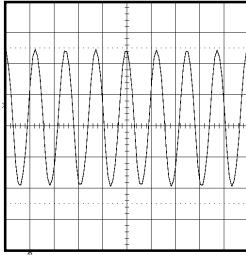
Q1505	
Pin	Volt.
B	3.5
C	3.5
E	2.9

Q1507	
Pin	Volt.
B	3
C	3.5
E	3.2

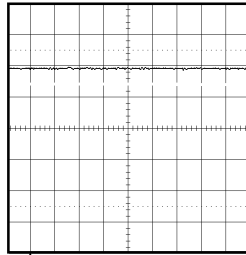
B BASE
 C COLLECTOR
 E EMITTER
 G GATE
 S SOURCE
 D DRAIN

WAVEFORMS

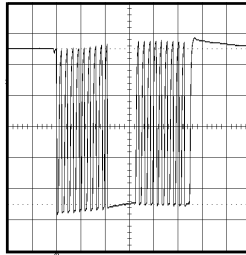
MICON



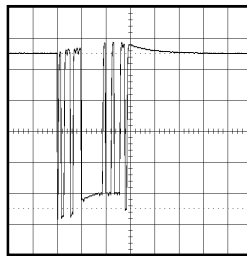
① 1V 0.1μs/div



② 1V 1μs/div

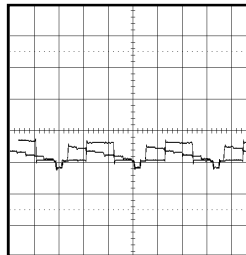


③ 1V 50μs/div

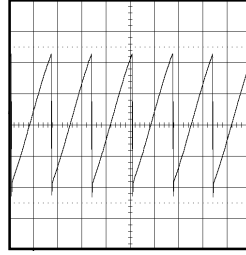


④ 1V 0.1ms/div

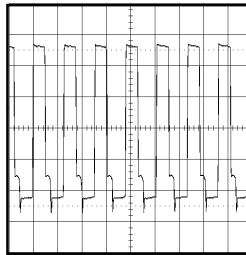
CHROMA



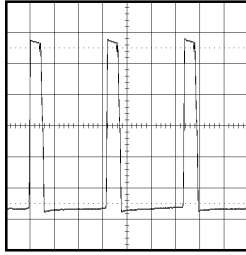
⑦ 1V 20μs/div



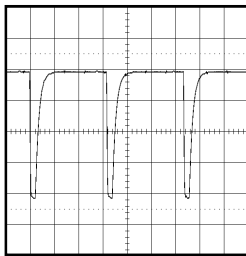
⑧ 0.5V 10ms/div



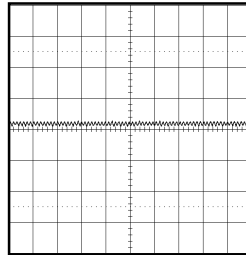
⑨ 1V 50μs/div



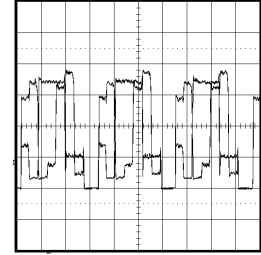
⑩ 2V 20μs/div



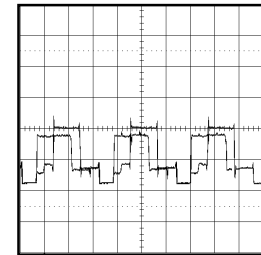
⑪ 0.5V 20μs/div



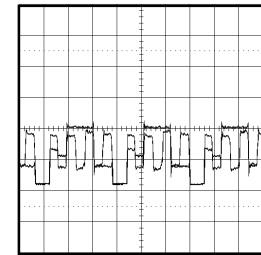
⑫ 1V 2μs/div



⑬ 1V 20μs/div

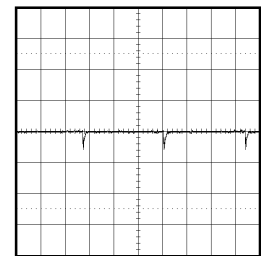


⑭ 2V 20μs/div

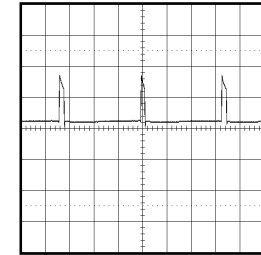


⑮ 2V 20μs/div

DEFLECTION



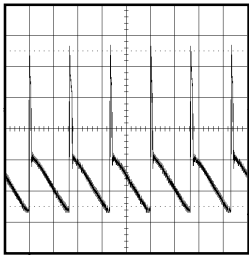
⑯ 2V 5ms/div



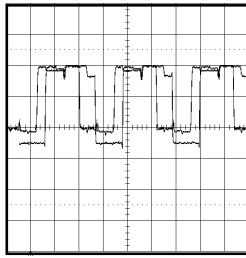
⑰ 20V 5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

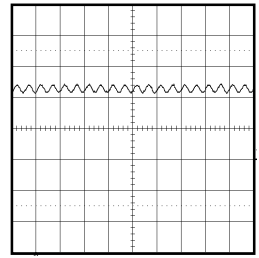
WAVEFORMS



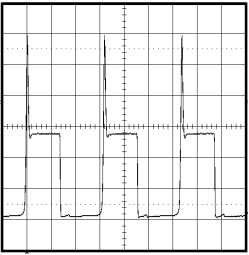
⑱ 10V 10ms/div



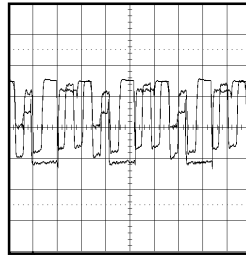
③⑧ 50V 20 μ s/div



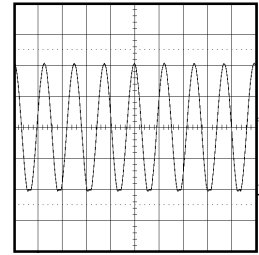
②⑤ 2V 5ms/div



⑲ 20V 20 μ s/div

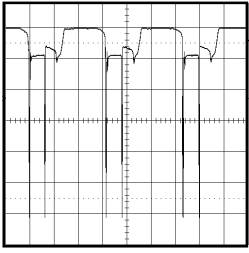


③⑨ 50V 20 μ s/div

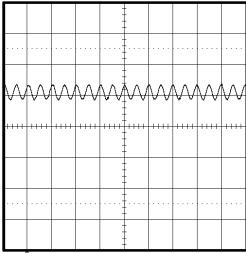


②⑥ 5V 2ms/div

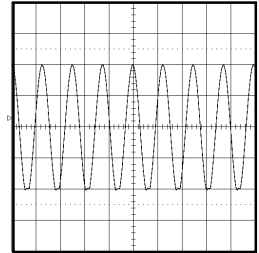
SOUND



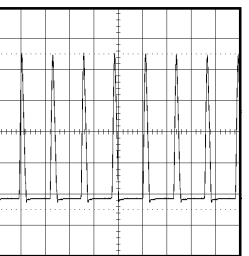
②⑩ 2V 20 μ s/div



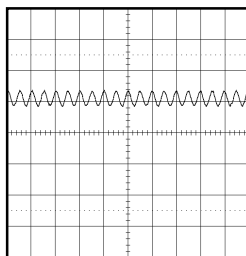
②② 2V 5ms/div



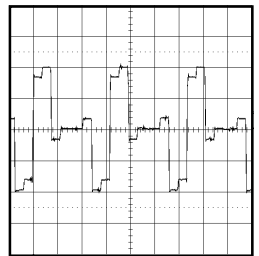
②⑦ 5V 2ms/div



②① 200V 50 μ s/div

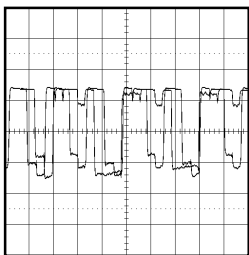


②③ 2V 5ms/div

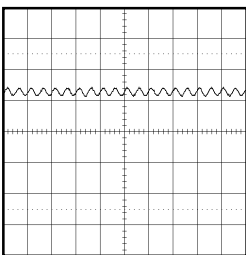


②⑧ 200mV 20 μ s/div

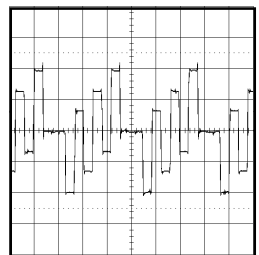
CRT/SVM



③⑦ 50V 20 μ s/div



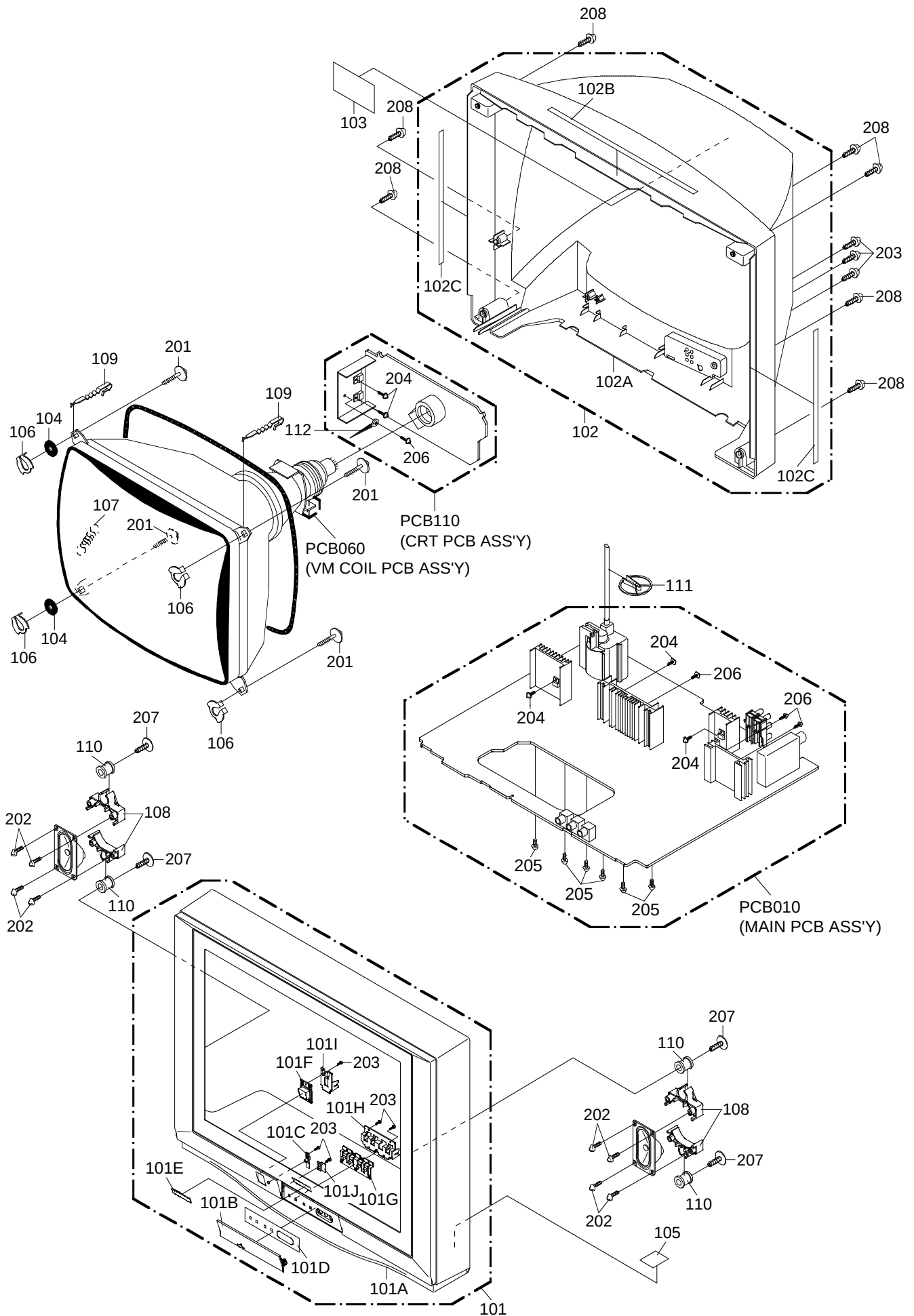
②④ 2V 5ms/div



②⑨ 200mV 20 μ s/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

Location No.	Part No.	Description	Reference No.
101	7A701A404A	FRONT CABI ASS'Y	
101A	701WPJD010	CABINET,FRONT	
101B	712WPBA133	DOOR	
101C	713WPA0362	GUIDE,REMOCON	
101D	723000C948	SHEET,BUTTON	
101E	723576A007	BADGE,BRAND	
101F	735WPBB404	BUTTON,POWER	
101G	735WPBB405	BUTTON,FRAME	
101H	738WPA0148	STOPPER,BUTTON	
101I	738WPA0149	STOPPER,BUTTON-POWER	
101J	744WUA0020	SPRING,DOOR	
102	7A702A128A	BACK CABI ASS'Y	
102A	702WPAA860	CABINET,BACK	
102B	800WQ0A076	FELT SHEET	
102C	800WQ0A090	FELT SHEET	
103	726000A109	SHEET,CRT SERVICEMAN	
104	800WR0A002	SHEET,CRT SUPPORT	
105	724000A006	SHEET,CSA	
106	769WSAA009	WASHER CRT T=1	
107	741WUA0021	SPRING,EARTH	
108	761WPA0220	HOLDER,SPEAKER	
109	762WPA0011	HOLDER,CRT WIRE	
110	801WR00001	DAMPER,SPEAKER	
111	899HV3T000	HOLDER,ANODE WIRE	
112	8995034000	CORD CLIP UL CO.	
---	J3T00231A	INSTRUCTION BOOK(E/S/F)	

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Reference No.	REF. NO.	PART NO.	DESCRIPTION	Reference No.
RESISTORS				RESISTORS			
R001	R002T2683J	RC	68K OHM 1/2W	△ R452	R3X18A390J	R,METAL OXIDE	39 OHM 2W
R002	R002T2683J	RC	68K OHM 1/2W	R453	R002T4103J	RC	10K OHM 1/4W
R004	R002T4221J	RC	220 OHM 1/4W	R455	R002T2221J	RC	220 OHM 1/2W
R005	R002T4221J	RC	220 OHM 1/4W	R456	R002T2562J	RC	5.6K OHM 1/2W
R006	R803R9101J	RC	100 OHM 1/16W	R457	R002T4472J	RC	4.7K OHM 1/4W
R101	R803R9561J	RC	560 OHM 1/16W	R458	R803R9102J	RC	1K OHM 1/16W
R103	R803R9272J	RC	2.7K OHM 1/16W	△ R459	R655822R2J	R,FUSE	2.2 OHM 1/2W
R104	R803R9184J	RC	180K OHM 1/16W	R461	R803R9222J	RC	2.2K OHM 1/16W
R105	R803R9472J	RC	4.7K OHM 1/16W	R462	R803R9103J	RC	10K OHM 1/16W
R106	R803R9561J	RC	560 OHM 1/16W	△ R500	R0G3K2275K	RC	2.7M OHM 1/2W
R107	R803R9472J	RC	4.7K OHM 1/16W	△ R501	R5X2AE010J	R,CEMENT	1 OHM 7W
R108	R803R9682J	RC	6.8K OHM 1/16W	△ R502	R3X28A331J	R,METAL OXIDE	330 OHM 2W
R110	R803R9103J	RC	10K OHM 1/16W	R503	R002T4472J	RC	4.7K OHM 1/4W
R111	R803R9153J	RC	15K OHM 1/16W	R504	R803R9563J	RC	56K OHM 1/16W
R112	R803R9222J	RC	2.2K OHM 1/16W	R505	R002T4103J	RC	10K OHM 1/4W
R113	R803R9222J	RC	2.2K OHM 1/16W	△ R506	R002T4682J	RC	6.8K OHM 1/4W
R114	R803R9473J	RC	47K OHM 1/16W	R507	R002T2823J	RC	82K OHM 1/2W
R115	R803R9473J	RC	47K OHM 1/16W	R508	R002T4102J	RC	1K OHM 1/4W
R116	R803R9103J	RC	10K OHM 1/16W	R509	R002T2102J	RC	1K OHM 1/2W
R118	R803R9222J	RC	2.2K OHM 1/16W	R510	R002T4101J	RC	100 OHM 1/4W
R119	R002T4223J	RC	22K OHM 1/4W	R511	R002T4223J	RC	22K OHM 1/4W
R120	R002T4470J	RC	47 OHM 1/4W	R512	R803R9103J	RC	10K OHM 1/16W
R122	R803R9102J	RC	1K OHM 1/16W	R513	R803R9103J	RC	10K OHM 1/16W
R124	R002T4102J	RC	1K OHM 1/4W	R514	R002T4103J	RC	10K OHM 1/4W
R125	R803R9100J	RC	10 OHM 1/16W	R515	R002T4103J	RC	10K OHM 1/4W
R126	R803R9101J	RC	100 OHM 1/16W	R516	R803R9103J	RC	10K OHM 1/16W
R127	R803R9272J	RC	2.7K OHM 1/16W	△ R517	R3X28B010J	R,METAL OXIDE	1 OHM 3W
R128	R803R9272J	RC	2.7K OHM 1/16W	R518	R803R9103J	RC	10K OHM 1/16W
R129	R803R9272J	RC	2.7K OHM 1/16W	R519	R803R9103J	RC	10K OHM 1/16W
R130	R002T4473J	RC	47K OHM 1/4W	△ R520	R002T2155J	RC	1.5M OHM 1/2W
R131	R803R9102J	RC	1K OHM 1/16W	R521	R002T4100J	RC	10 OHM 1/4W
R132	R002T4101J	RC	100 OHM 1/4W	R522	R002T4470J	RC	47 OHM 1/4W
R134	R803R9103J	RC	10K OHM 1/16W	R523	R002T4681J	RC	680 OHM 1/4W
R135	R803R9472J	RC	4.7K OHM 1/16W	R524	R002T4332J	RC	3.3K OHM 1/4W
R136	R803R9472J	RC	4.7K OHM 1/16W	R525	R803R9153J	RC	15K OHM 1/16W
R138	R803R9105J	RC	1M OHM 1/16W	△ R527	R3X18AR68J	R,METAL OXIDE	0.68 OHM 2W
R139	R002T4101J	RC	100 OHM 1/4W	R531	R002T2222J	RC	2.2K OHM 1/2W
R140	R002T4101J	RC	100 OHM 1/4W	R532	R803R9152J	RC	1.5K OHM 1/16W
R141	R803R9561J	RC	560 OHM 1/16W	R533	R803R9271J	RC	270 OHM 1/16W
R142	R803R9561J	RC	560 OHM 1/16W	R535	R002T4103J	RC	10K OHM 1/4W
R143	R803R9561J	RC	560 OHM 1/16W	R536	R002T4473J	RC	47K OHM 1/4W
R145	R803R9222J	RC	2.2K OHM 1/16W	R537	R002T4333J	RC	33K OHM 1/4W
R146	R002T4101J	RC	100 OHM 1/4W	R539	R002T2125J	RC	1.2M OHM 1/2W
R150	R803R9102J	RC	1K OHM 1/16W	R540	R002T2125J	RC	1.2M OHM 1/2W
R301	R803R9272J	RC	2.7K OHM 1/16W	△ R541	R63881R22J	R,FUSE	0.22 OHM 1W
R302	R803R9272J	RC	2.7K OHM 1/16W	△ R542	R3X181R15J	R,METAL OXIDE	0.15 OHM 1W
R401	R803R9472J	RC	4.7K OHM 1/16W	R543	R002T4102J	RC	1K OHM 1/4W
R402	R65581680J	R,FUSE	68 OHM 1W	R544	R002T4271J	RC	270 OHM 1/4W
R404	R803R9101J	RC	100 OHM 1/16W	R545	R002T4151J	RC	150 OHM 1/4W
R406	R002T2471J	RC	470 OHM 1/2W	R546	R002T4101J	RC	100 OHM 1/4W
R407	R002T4122J	RC	1.2K OHM 1/4W	R553	R002T2333J	RC	33K OHM 1/2W
△ R410	R3X18A681J	R,METAL OXIDE	680 OHM 2W	R554	R002T2104J	RC	100K OHM 1/2W
R413	R4X5T6183F	R,METAL	18K OHM 1/6W	△ R601	R3X181100J	R,METAL OXIDE	10 OHM 1W
R414	R4X5T6273F	R,METAL	27K OHM 1/6W	△ R602	R3X28B150J	R,METAL OXIDE	15 OHM 3W
R415	R803R9821J	RC	820 OHM 1/16W	R603	R002T2331J	RC	330 OHM 1/2W
△ R416	R002T22R2J	RC	2.2 OHM 1/2W	R604	R3X28B270J	R,METAL OXIDE	27 OHM 3W
R417	R803R9393J	RC	39K OHM 1/16W	R605	R803R9101J	RC	100 OHM 1/16W
R418	R002T2821J	RC	820 OHM 1/2W	R606	R803R9152J	RC	1.5K OHM 1/16W
△ R420	R002T22R2J	RC	2.2 OHM 1/2W	R607	R002T4105J	RC	1M OHM 1/4W
R421	R002T2561J	RC	560 OHM 1/2W	R608	R803R9105J	RC	1M OHM 1/16W
R422	R002T2821J	RC	820 OHM 1/2W	R609	R803R9101J	RC	100 OHM 1/16W
△ R426	R4X5T4472F	R,METAL	4.7K OHM 1/4W	R610	R803R9101J	RC	100 OHM 1/16W
R427	R002T2102J	RC	1K OHM 1/2W	R611	R803R9103J	RC	10K OHM 1/16W
R428	R002T4101J	RC	100 OHM 1/4W	R612	R002T4103J	RC	10K OHM 1/4W
R429	R002T2561J	RC	560 OHM 1/2W	R613	R803R9101J	RC	100 OHM 1/16W
R430	R002T2104J	RC	100K OHM 1/2W	R614	R803R9101J	RC	100 OHM 1/16W
R432	R002T2103J	RC	10K OHM 1/2W	R615	R803R9101J	RC	100 OHM 1/16W
R433	R002T2561J	RC	560 OHM 1/2W	R616	R002T2121J	RC	120 OHM 1/2W
△ R434	R5X2CF8R2J	R,CEMENT	8.2J 8.2 OHM 10W	R618	R803R9822J	RC	8.2K OHM 1/16W
△ R436	R4X5T4183F	R,METAL	18K OHM 1/4W	R619	R803R9102J	RC	1K OHM 1/16W
R437	R002T2010J	RC	1 OHM 1/2W	R620	R002T4221J	RC	220 OHM 1/4W
△ R438	R3X28B3R3J	R,METAL OXIDE	3.3 OHM 3W	R621	R803R9332J	RC	3.3K OHM 1/16W
△ R439	R3K581102J	R,METAL OXIDE	1K OHM 1W	R622	R803R9562J	RC	5.6K OHM 1/16W
△ R441	R4X5T6153F	R,METAL	15K OHM 1/6W	R623	R002T4221J	RC	220 OHM 1/4W
R443	R002T2154J	RC	150K OHM 1/2W	R624	R803R9153J	RC	15K OHM 1/16W
R448	R803R9563J	RC	56K OHM 1/16W	R625	R803R9123J	RC	12K OHM 1/16W
R449	R803R9273J	RC	27K OHM 1/16W	R626	R002T4221J	RC	220 OHM 1/4W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Reference No.	REF. NO.	PART NO.	DESCRIPTION	Reference No.
RESISTORS				RESISTORS			
R627	R803R9101J	RC	100 OHM 1/16W	R907	R803R9224J	RC	220K OHM 1/16W
R628	R803R9101J	RC	100 OHM 1/16W	R908	R002T4101J	RC	100 OHM 1/4W
R629	R803R9682J	RC	6.8K OHM 1/16W	R909	R002T4101J	RC	100 OHM 1/4W
R630	R803R9101J	RC	100 OHM 1/16W	R912	R803R9331J	RC	330 OHM 1/16W
R631	R002T4101J	RC	100 OHM 1/4W	R913	R803R9685J	RC	6.8M OHM 1/16W
R632	R803R9333J	RC	33K OHM 1/16W	R1001	R803R9683J	RC	68K OHM 1/16W
R634	R803R9102J	RC	1K OHM 1/16W	R1002	R803R9473J	RC	47K OHM 1/16W
R635	R803R9124J	RC	120K OHM 1/16W	R1003	R803R9274J	RC	270K OHM 1/16W
R636	R803R9152J	RC	1.5K OHM 1/16W	R1004	R002T4153J	RC	15K OHM 1/4W
R641	R803R9103J	RC	10K OHM 1/16W	R1006	R803R9472J	RC	4.7K OHM 1/16W
R642	R803R9332J	RC	3.3K OHM 1/16W	R1008	R803R9472J	RC	4.7K OHM 1/16W
R643	R803R9102J	RC	1K OHM 1/16W	R1009	R803R9472J	RC	4.7K OHM 1/16W
R644	R803R9561J	RC	560 OHM 1/16W	R1010	R803R9103J	RC	10K OHM 1/16W
R645	R803R9271J	RC	270 OHM 1/16W	R1011	R803R9222J	RC	2.2K OHM 1/16W
R646	R803R9472J	RC	4.7K OHM 1/16W	R1012	R803R9222J	RC	2.2K OHM 1/16W
R647	R803R9472J	RC	4.7K OHM 1/16W	R1014	R803R9103J	RC	10K OHM 1/16W
▲ R649	R3X28B100J	R,METAL OXIDE	10 OHM 3W	R1015	R803R9103J	RC	10K OHM 1/16W
R657	R803R9750J	RC	75 OHM 1/16W	R1016	R002T4473J	RC	47K OHM 1/4W
R725	R803R9750J	RC	75 OHM 1/16W	R1017	R803R9104J	RC	100K OHM 1/16W
R726	R803R9822J	RC	8.2K OHM 1/16W	R1501	R803R9331J	RC	330 OHM 1/16W
R729	R803R9750J	RC	75 OHM 1/16W	R1502	R002T4331J	RC	330 OHM 1/4W
R730	R803R9750J	RC	75 OHM 1/16W	R1503	R803R9222J	RC	2.2K OHM 1/16W
R733	R803R9822J	RC	8.2K OHM 1/16W	R1504	R803R9101J	RC	100 OHM 1/16W
R735	R803R9750J	RC	75 OHM 1/16W	R1505	R803R9101J	RC	100 OHM 1/16W
R736	R803R9750J	RC	75 OHM 1/16W	R1506	R803R9821J	RC	820 OHM 1/16W
R739	R803R9750J	RC	75 OHM 1/16W	R1507	R803R9102J	RC	1K OHM 1/16W
R745	R803R9822J	RC	8.2K OHM 1/16W	R1508	R803R9102J	RC	1K OHM 1/16W
R746	R002T4822J	RC	8.2K OHM 1/4W	R1509	R803R9102J	RC	1K OHM 1/16W
R801	R803R9181J	RC	180 OHM 1/16W	R1510	R803R9221J	RC	220 OHM 1/16W
R802	R002T4272J	RC	2.7K OHM 1/4W	R1512	R803R9102J	RC	1K OHM 1/16W
▲ R803	R3X18A103J	R,METAL OXIDE	10K OHM 2W	R1516	R002T4221J	RC	220 OHM 1/4W
R804	R002T4272J	RC	2.7K OHM 1/4W	R1517	R803R9102J	RC	1K OHM 1/16W
▲ R805	R3X18A103J	R,METAL OXIDE	10K OHM 2W	CAPACITORS			
R806	R002T4272J	RC	2.7K OHM 1/4W	C001	E02LU3101M	CE	100 UF 25V
▲ R807	R3X18A103J	R,METAL OXIDE	10K OHM 2W	C002	CS0PB0415K	CC	0.1 UF 50V B
R808	R803R9181J	RC	180 OHM 1/16W	C003	CS0PCH4S1J	CC	56 PF 50V CH
R809	R803R9272J	RC	2.7K OHM 1/16W	C004	CS0PCH4S1J	CC	56 PF 50V CH
R810	R803R9181J	RC	180 OHM 1/16W	C005	CS0PF0415Z	CC	0.1 UF 50V F
R811	R803R9272J	RC	2.7K OHM 1/16W	C101	CS0PB0N16K	CC	1 UF 10V B
R813	R803R9331J	RC	330 OHM 1/16W	C102	CS0PCH4K1J	CC	27 PF 50V CH
R814	R803R9272J	RC	2.7K OHM 1/16W	C103	CS0PCH412J	CC	100 PF 50V CH
R815	R803R9331J	RC	330 OHM 1/16W	C104	CS0PCH4K1J	CC	27 PF 50V CH
R816	R803R9331J	RC	330 OHM 1/16W	C106	CS0PB0415K	CC	0.1 UF 50V B
R817	R803R9680J	RC	68 OHM 1/16W	C107	CS0PCH412J	CC	100 PF 50V CH
R818	R803R9680J	RC	68 OHM 1/16W	C108	E50HU3100M	CE	10 UF 25 V
R819	R803R9680J	RC	68 OHM 1/16W	C109	CS0PB0415K	CC	0.1 UF 50V B
R822	R002T22R2J	RC	2.2 OHM 1/2W	C110	E02LF0332M	CE	3300 UF 6.3V
R824	R002T2100J	RC	10 OHM 1/2W	C111	CS0PB0413K	CC	0.001 UF 50V B
R853	R803R9223J	RC	22K OHM 1/16W	C113	CS0PB0415K	CC	0.1 UF 50V B
R854	R803R9333J	RC	33K OHM 1/16W	C114	CS0PB0N16K	CC	1 UF 10V B
▲ R855	R65582331J	R,FUSE	330 OHM 1/2W	C117	CS0PCH4Q1J	CC	47 PF 50V CH
R856	R803R9102J	RC	1K OHM 1/16W	C119	CS0PCH412J	CC	100 PF 50V CH
R857	R002T4471J	RC	470 OHM 1/4W	C120	CS0PB0413K	CC	0.001 UF 50V B
R858	R803R9101J	RC	100 OHM 1/16W	C121	CS0PB0414K	CC	0.01 UF 50V B
R859	R803R9272J	RC	2.7K OHM 1/16W	C122	CS0PB0N16K	CC	1 UF 10V B
R860	R803R9330J	RC	33 OHM 1/16W	C128	CS0PF0414Z	CC	0.01 UF 50V F
R861	R803R9333J	RC	33K OHM 1/16W	C135	CS0PCH411D	CC	10 PF 50V CH
R862	R803R9392J	RC	3.9K OHM 1/16W	C136	CS0PB0415K	CC	0.1 UF 50V B
R863	R803R9392J	RC	3.9K OHM 1/16W	C137	CS0PB0415K	CC	0.1 UF 50V B
R864	R803R9393J	RC	39K OHM 1/16W	C138	CS0PB0415K	CC	0.1 UF 50V B
R865	R803R9563J	RC	56K OHM 1/16W	C139	E50HU3100M	CE	10 UF 25 V
R866	R803R9222J	RC	2.2K OHM 1/16W	C140	CS0PCH4H2J	CC	220 PF 50V CH
R867	R002T2100J	RC	10 OHM 1/2W	C141	CS0PCH4H2J	CC	220 PF 50V CH
R868	R803R9820J	RC	82 OHM 1/16W	C142	CS0PCH4H2J	CC	220 PF 50V CH
R869	R803R9820J	RC	82 OHM 1/16W	C143	CS0PCH4H2J	CC	220 PF 50V CH
R870	R803R9152J	RC	1.5K OHM 1/16W	C144	CS0PCH412J	CC	100 PF 50V CH
R871	R803R9152J	RC	1.5K OHM 1/16W	C333	E50HU54R7M	CE	4.7 UF 50V
R872	R803R9122J	RC	1.2K OHM 1/16W	C401	C0J2SL5K1J	CC	27 PF 500V SL
R873	R002T4683J	RC	68K OHM 1/4W	C402	P232W1103J	CMP	0.01 UF 100V MMTS
R874	R803R9683J	RC	68K OHM 1/16W	C403	E02LU5220M	CE	22 UF 50V
R875	R803R9122J	RC	1.2K OHM 1/16W	C404	CS0PCH4Q2J	CC	470 PF 50V CH
R876	R002T4123J	RC	12K OHM 1/4W	C405	CS0PCH4S2J	CC	560 PF 50V CH
R877	R002T2680J	RC	68 OHM 1/2W	C406	E02LU5010M	CE	1 UF 50V
R878	R002T2680J	RC	68 OHM 1/2W	C407	E02LU4101M	CE	100 UF 35V
R879	R002T22R7J	RC	2.7 OHM 1/2W	▲ C408	E5EZF3222M	CE	2200 UF 25V
R880	R002T22R7J	RC	2.7 OHM 1/2W	C409	E02LU5100M	CE	10 UF 50V
▲ R881	R3X18A101J	R,METAL OXIDE	100 OHM 2W	▲ C410	E02LTD2R2M	CE	2.2 UF 250V

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Reference No.	REF. NO.	PART NO.	DESCRIPTION	Reference No.
CAPACITORS				CAPACITORS			
C411	CS0PCH413J	CC	0.001 UF 50V CH	C638	E62KU5100M	CE	10 UF 50V
△ C412	P4N8FK222H	CMPP	0.0022UF 1.5KV	C639	CS0PCH4L1J	CC	33 PF 50V CH
△ C413	E02LF4102M	CE	1000 UF 35V	C640	CS0PCH4H1J	CC	22 PF 50V CH
C415	C0JTB05H2K	CC	220 PF 500V B	C641	CQGTB0415K	CC	0.1 UF 50V B
C417	P232W1224J	CMP	0.22 UF 100V MMTS	C642	E50HU5010M	CE	1 UF 50V
C418	P4J7F3394J	CMPP	0.39 UF 250V PMS	C643	CS0PCH4L1J	CC	33 PF 50V CH
C419	C0JTB05H3K	CC	0.0022UF 500V B	C644	CS0PCH4L1J	CC	33 PF 50V CH
△ C420	P4N8FJ133H	CMPP	0.013 UF 1.25KV	C645	E02LU2101M	CE	100 UF 16V
△ C421	P3N1F5273J	CPP	0.027 UF 630V	C646	CS0PCH4H1J	CC	22 PF 50V CH
C425	C03L0R7S2K	CC	560 PF 2KV R	C647	CS0PCH4H1J	CC	22 PF 50V CH
△ C426	E5EZFD220M	CE	22 UF 250V	C719	CS0PB0N16K	CC	1 UF 10V B
C427	P235W1104J	CMP	0.1 UF 100V MKT	C720	CS0PB0N16K	CC	1 UF 10V B
△ C430	E02LU8220M	CE	22 UF 100V	C722	CS0PB0N16K	CC	1 UF 10V B
C439	CS0PB0413K	CC	0.001 UF 50V B	C725	CS0PB0N16K	CC	1 UF 10V B
△ C442	E736F56R8M	CE	6.8 UF 50V	C732	CS0PCH4L1J	CC	33 PF 50V CH
△ C501	E02LF3222M	CE	2200 UF 25V	C733	E50HU2220M	CE	22 UF 16V
△ C502	C0PLRR713K	CC	0.001 UF 2KV R	C734	CS0PB0415K	CC	0.1 UF 50V B
△ C503	C0PLRR713K	CC	0.001 UF 2KV R	C736	CS0PB04S3K	CC	0.0056UF 50V B
△ C504	E02LU5100M	CE	10 UF 50V	C738	CS0PB04S3K	CC	0.0056UF 50V B
△ C505	P2122B224M	CMP	0.22 UF 275V ECQUL	C741	CS0PB04S3K	CC	0.0056UF 50V B
△ C506	P2122B104M	CMP	0.1 UF 275V ECQUL	C742	CS0PB04S3K	CC	0.0056UF 50V B
△ C507	E51DFC821M	CE	820 UF 200V	C802	C0JBB0713K	CC	0.001 UF 2KV B
C508	CD39E0MH3M	CC	0.0022UF 250V	C805	CS0PB0413K	CC	0.001 UF 50V B
C509	E02LU3470M	CE	47 UF 25V	C809	CS0PCH4L2J	CC	330 PF 50V CH
C512	P232W1473J	CMP	0.047 UF 100V MMTS	C810	CS0PCH4K2J	CC	270 PF 50V CH
△ C513	CD39E0M13M	CC	0.001 UF 250V	C811	CS0PCH4K2J	CC	270 PF 50V CH
C514	CS0PB0415K	CC	0.1 UF 50V B	C853	E02LU2470M	CE	47 UF 16V
C515	CQGTB0415K	CC	0.1 UF 50V B	C854	E02LTB100M	CE	10 UF 160V
C517	C03L0R7H3K	CC	0.0022UF 2KV R	C855	CS0PCH4S2J	CC	560 PF 50V CH
C518	E02LU84R7M	CC	4.7 UF 100V	C856	CS0PB0414K	CC	0.001 UF 50V B
△ C519	CD39E0M13M	CE	0.001 UF 250V	C857	CS0PB0413K	CC	0.001 UF 50V B
C520	C0JTB05H2K	CC	220 PF 500V B	C858	CS0PCH412J	CC	100 PF 50V CH
△ C521	E62NFC221M	CE	220 UF 200V	C859	CS0PCH412J	CC	100 PF 50V CH
C522	CHGTB04K2K	CC	270 PF 50V B	C860	C0JTB05Q3K	CC	0.0047UF 500V B
C523	C0JTB05H2K	CC	220 PF 500V B	C861	C0JTB05Q3K	CC	0.0047UF 500V B
C524	P1M4T0472J	CP	0.0047UF 50V	C862	E02LU2470M	CE	47 UF 16V
△ C527	E02LF2222M	CE	2200 UF 16V	C863	E02LU2470M	CE	47 UF 16V
C535	C03L0R7H3K	CC	0.0022UF 2KV R	C864	E02LTB100M	CE	10 UF 160V
C541	CS0PF04H5Z	CC	0.22 UF 50V F	C865	C0JTB05E2K	CC	150 PF 500V B
C550	E02LU2221M	CE	220 UF 16V	C866	E02L0D010M	CE	1 UF 250V
C554	CS0PB04H4K	CC	0.022 UF 50V B		E02LTD010M	CE	1 UF 250V
C601	E00NU2470M	CE	47 UF 16 V	C903	E50HU54R7M	CE	4.7 UF 50V
C602	E02LU2101M	CE	100 UF 16V	C904	E50HU54R7M	CE	4.7 UF 50V
C603	E02LU2470M	CE	47 UF 16V	C905	E50HU54R7M	CE	4.7 UF 50V
C604	CS0PCH412J	CC	100 PF 50V CH	C907	E02LU5100M	CE	10 UF 50V
C605	E02LU2470M	CE	47 UF 16V	C908	CS0PB04H4K	CC	0.022 UF 50V B
C606	P6M9T0334J	CMPL	0.33 UF 50V TF	C910	CS0PB0N5K	CC	0.33 UF 10V B
C607	CS0PB0414K	CC	0.01 UF 50V B	C911	CS0PB04Q4K	CC	0.047 UF 50V B
C608	CQGTCH4U2J	CC	680 PF 50V CH	C912	CS0PB04H4K	CC	0.022 UF 50V B
C609	P6M9T0104J	CMPL	0.1 UF 50V TF	C913	CS0PB0415K	CC	0.1 UF 50V B
C610	E02LU2470M	CE	47 UF 16V	C914	E50HU53R3M	CE	3.3 UF 50V
C611	CS0PB0N16K	CC	1 UF 10V B	C915	CS0PB0415K	CC	0.1 UF 50V B
C612	CS0PB0414K	CC	0.01 UF 50V B	C916	E02LU1471M	CE	470 UF 10V
C613	CS0PCH412J	CC	100 PF 50V CH	C917	CS0PB0415K	CC	0.1 UF 50V B
C614	CQGTB0415K	CC	0.1 UF 50V B	C918	CS0PB0415K	CC	0.1 UF 50V B
C615	CS0PB0N16K	CC	1 UF 10V B	C919	E02LU5100M	CE	10 UF 50V
C616	CS0PB0414K	CC	0.01 UF 50V B	C1001	CS0PB0N16K	CC	1 UF 10V B
C617	CS0PCH412J	CC	100 PF 50V CH	C1002	CS0PB04W3K	CC	0.0082UF 50V B
C618	CS0PB0N16K	CC	1 UF 10V B	C1003	CS0PB0N16K	CC	1 UF 10V B
C619	CQGTB0415K	CC	0.1 UF 50V B	C1004	CS0PB04W3K	CC	0.0082UF 50V B
C621	CS0PB0N16K	CC	1 UF 10V B	C1005	E50HU3100M	CE	10 UF 25 V
C622	E02LU2470M	CE	47 UF 16V	C1006	E02LU5220M	CE	22 UF 50V
C623	E02LU2101M	CE	100 UF 16V	C1007	CS0PB04N2K	CC	390 PF 50V B
C624	CS0PB0415K	CC	0.1 UF 50V B	C1008	CS0PB0413K	CC	0.001 UF 50V B
C625	CS0PCH4Q1J	CC	47 PF 50V CH	C1009	E50HU5R47M	CE	0.47 UF 50V
C626	CS0PB0412K	CC	100 PF 50V B	C1010	CS0PB0413K	CC	0.001 UF 50V B
C627	CS0PCH4L1J	CC	33 PF 50V CH	C1011	E02LF2222M	CE	2200 UF 16V
C628	CS0PB0414K	CC	0.01 UF 50V B	C1501	E62KU5100M	CE	10 UF 50V
C629	E02LT2102M	CE	1000 UF 16V	C1502	CS0PCH4Q1J	CC	47 PF 50V CH
C630	CS0PB0NQ5K	CC	0.47 UF 10V B	C1503	E50HU54R7M	CE	4.7 UF 50V
C631	CS0PB04E4K	CC	0.015 UF 50V B	C1504	E00NU5R47M	CE	0.47 UF 50 V
C632	CS0PCH4G1J	CC	18 PF 50V CH	C1505	CS0PB0N16K	CC	1 UF 10V B
C633	CS0PCH4W1J	CC	82 PF 50V CH	C1507	CS0PF0414Z	CC	0.01 UF 50V F
C634	CS0PB0415K	CC	0.1 UF 50V B	C1508	CS0PB0415K	CC	0.1 UF 50V B
C635	CS0PCH4L1J	CC	33 PF 50V CH	C1509	CS0PB0414K	CC	0.01 UF 50V B
C636	CQGTB04W3K	CC	0.0082UF 50V B	C1510	CS0PB0414K	CC	0.01 UF 50V B
C637	CS0PCH4L1J	CC	33 PF 50V CH	C1511	CS0PB0415K	CC	0.1 UF 50V B

or

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Reference No.	REF. NO.	PART NO.	DESCRIPTION	Reference No.
CAPACITORS				DIODES			
C1512	E02LU2101M	CE 100 UF 16V		D612	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77	
C1513	E02LU3101M	CE 100 UF 25V		D614	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77	
C1514	E02LU1101M	CC 100 UF 10V		D709	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77	
C1515	CQGTCH412J	CC 100 PF 50V CH		D801	D1VT001330	DIODE,SILICON 1SS133T-77	
C1516	CS0PB0414K	CC 0.01 UF 50V B		D802	D1VT001330	DIODE,SILICON 1SS133T-77	
C1517	CS0PB0414K	CC 0.01 UF 50V B		D803	D1VT001330	DIODE,SILICON 1SS133T-77	
C1518	CS0PCH4G2J	CC 180 PF 50V CH		D810	D1VT001330	DIODE,SILICON 1SS133T-77	
C1519	CS0PB0414K	CC 0.01 UF 50V B		D811	D1VT001330	DIODE,SILICON 1SS133T-77	
C1520	CS0PB04H3K	CC 0.0022UF 50V B		D812	D1VT001330	DIODE,SILICON 1SS133T-77	
C1523	CS0PF0415Z	CC 0.1 UF 50V F		D852	D1VT001330	DIODE,SILICON 1SS133T-77	
C1526	CS0PCH4S1J	CC 56 PF 50V CH		D853	D1VT001330	DIODE,SILICON 1SS133T-77	
C1532	E02LU2101M	CE 100 UF 16V		D854	D1VT001330	DIODE,SILICON 1SS133T-77	
DIODES				D855	D1VT001330	DIODE,SILICON 1SS133T-77	
D001	D97U03301B	DIODE,ZENER MTZJ33B T-77		D856	D1VT001330	DIODE,SILICON 1SS133T-77	
D102	D2WT011E10	DIODE,SILICON 11E1-EIC		D857	D28T0ERB20	DIODE,RECTIFIER 10ERB20-TA1B2	
D103	D1VT001330	DIODE,SILICON 1SS133T-77		D858	D28T0ERB20	DIODE,RECTIFIER 10ERB20-TA1B2	
D104	D1VT001330	DIODE,SILICON 1SS133T-77		D1501	D97U08R21B	DIODE,ZENER MTZJ8.2B T-77	
D105	D1VT001330	DIODE,SILICON 1SS133T-77		D1502	D97U08R21B	DIODE,ZENER MTZJ8.2B T-77	
D106	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77		ICS			
D107	D1VT001330	DIODE,SILICON 1SS133T-77		IC101	I56F07123A	IC OEC7123A	
D108	D1VT001330	DIODE,SILICON 1SS133T-77		IC102	I9UF032290	IC PST3229NR	
D110	D1VT001330	DIODE,SILICON 1SS133T-77		IC199	A3T0026075	INIT DATA AT24C04N-10SU-2.7	
D113	D2WT011E10	DIODE,SILICON 11E1-EIC		△ IC401	I03TD80410	IC LA78041	
D401	D1VT001330	DIODE,SILICON 1SS133T-77		△ IC504	000220002W	IC PHOTO COUPLER PS2561AL1-1-V(W)	
D402	D2WT011E10	DIODE,SILICON 11E1-EIC		IC601	I06FC1283B	IC M61283BFP	
D403	D97U03001B	DIODE,ZENER MTZJ30B T-77		IC902	I01FF58290	IC AN5829S-E1V	
D404	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77		△ IC1001	I0FSP7822A	IC AN17822A	
△ D405	D2WTAU02A0	DIODE,SILICON AU02A-EIC		IC1501	I05FEA45FG	IC TC90A45FG	
△ D406	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		IC1502	I0UF015010	IC MM1501XNRE	
△ D407	D2WTAU02A0	DIODE,SILICON AU02A-EIC		IC1503	I0UF015010	IC MM1501XNRE	
D408	D2CF0715L0	DIODE,SILICON ERD07-15L50		TRANSISTORS			
D409	D2CF2016L0	DIODE,SILICON FE201-6L49		Q103	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D410	D97U03001B	DIODE,ZENER MTZJ30B T-77		△ Q402	TCAT03227Y	TRANSISTOR,SILICON KTC3227_Y-AT	
△ D411	D2WTAU02A0	DIODE,SILICON AU02A-EIC		△ Q405	TD50026380	TRANSISTOR,SILICON 2SD2638(OEC)	
D414	D2WT011E10	DIODE,SILICON 11E1-EIC		Q408	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)	
D415	D2WT011E10	DIODE,SILICON 11E1-EIC		Q409	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)	
D416	D1VT001330	DIODE,SILICON 1SS133T-77		Q410	TC30041590	TRANSISTOR,SILICON 2SC4159(D,E)	
D419	D1VT001330	DIODE,SILICON 1SS133T-77		Q411	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
△ D501	D2WTRM11C0	DIODE,SILICON RM11C-EIC		△ Q502	T220033260	FET 2SK3326(Z)	
△ D502	D2WTRM11C0	DIODE,SILICON RM11C-EIC		△ Q503	TA3T1371A0	TRANSISTOR,SILICON 2SA1371(D,E)-AE	
△ D503	D2WTRM11C0	DIODE,SILICON RM11C-EIC		Q504	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
△ D504	D2WTRM11C0	DIODE,SILICON RM11C-EIC		△ Q505	TC3T029090	TRANSISTOR,SILICON 2SC2909(S,T)-AA	
△ D505	D28F0PRA60	DIODE,RECTIFIER 30PRA60-FC		△ Q507	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
△ D506	D2WKN49370	DIODE,SILICON 1N4937		△ Q508	TAAT012714	TRANSISTOR,SILICON KTA1271_Y-AT	
D507	D1VT001330	DIODE,SILICON 1SS133T-77		Q509	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D508	D2WKN49370	DIODE,SILICON 1N4937		△ Q512	TA3T016240	TRANSISTOR,SILICON 2SA1624-AA	
D509	D97U01301B	DIODE,ZENER MTZJ13B T-77		△ Q514	TCAT032034	TRANSISTOR,SILICON KTC3203_Y-AT	
△ D510	D2CF2016L0	DIODE,SILICON FE201-6L49		Q601	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT	
△ D511	D2WKN49370	DIODE,SILICON 1N4937		Q602	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT	
△ D512	D28T21DQ9N	DIODE,SCHOTTKY 21DQ09N-TA2B1		Q604	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT	
D513	D1VT001330	DIODE,SILICON 1SS133T-77		Q606	TCAT03209Y	TRANSISTOR,SILICON KTC3209_Y-AT	
D514	D1VT001330	DIODE,SILICON 1SS133T-77		Q607	TCAT032034	TRANSISTOR,SILICON KTC3203_Y-AT	
D516	D1VT001330	DIODE,SILICON 1SS133T-77		Q610	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D517	D1VT001330	DIODE,SILICON 1SS133T-77		Q613	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D518	D97U01301B	DIODE,ZENER MTZJ13B T-77		△ Q801	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT	
D519	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		△ Q802	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT	
D520	D1VT001330	DIODE,SILICON 1SS133T-77		△ Q803	TCATC3199Y	TRANSISTOR,SILICON KTC3199_Y-AT	
D521	D1VT001330	DIODE,SILICON 1SS133T-77		△ Q804	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)	
D522	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77		△ Q805	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)	
△ D523	D97U01801B	DIODE,ZENER MTZJ18B T-77		△ Q806	TCA0042170	TRANSISTOR,SILICON KTC4217(O,Y)	
D524	D1VT001330	DIODE,SILICON 1SS133T-77		Q852	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
△ D526	D6E027110A	DIODE,VARISTA ENE271D-10A		Q853	TCUT00752Y	TRANSISTOR,SILICON 2SC752(G)(TM)_Y	
D528	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		Q854	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
△ D529	DOU002720M	DIODE,VARISTA DSS-272M-S00B		Q855	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
D530	D97U02R71B	DIODE,ZENER MTZJ2.7B T-77		Q856	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
D531	D1VT001330	DIODE,SILICON 1SS133T-77		Q857	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)	
D601	D1VT001330	DIODE,SILICON 1SS133T-77		Q858	TA10021400	TRANSISTOR,SILICON 2SA2140	
D602	D97U08R21B	DIODE,ZENER MTZJ8.2B T-77		Q859	TC10059930	TRANSISTOR,SILICON 2SC5993	
D603	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		Q1001	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	
D604	D97U01201B	DIODE,ZENER MTZJ12B T-77		Q1003	TNYJD05001	COMPOUND TRANSISTOR DTC144EKAT146	
D605	D1VT001330	DIODE,SILICON 1SS133T-77		Q1004	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK	
D606	D1VT001330	DIODE,SILICON 1SS133T-77		Q1005	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK	
D607	D1VT001330	DIODE,SILICON 1SS133T-77		Q1501	TAAA1504SY	TRANSISTOR,SILICON KTA1504S_Y_RTK	
D608	D2WT011E10	DIODE,SILICON 11E1-EIC		Q1502	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D609	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		Q1505	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S	
D610	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77		Q1507	TCAA3875SY	TRANSISTOR,SILICON KTC3875S_Y_RTK	
D611	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77					

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Reference No.	REF. NO.	PART NO.	DESCRIPTION	Reference No.
COILS & TRANSFORMERS				SWITCHES			
L401	021U6D472K	COIL	4.7 MH	△ SP1001	070W457007	SPEAKER	MSF-2D5D10W
L402	022100027A	COIL,LINEARITY	ELH5L4113	△ SP1002	070W457007	SPEAKER	MSF-2D5D10W
L403	02DK000058	COIL,CHOKE	02DK000058	△ TH501	D8EE0B1400	DEGAUSS ELEMENT	B59203-S1060-B14
△ L501	029T000101	COIL,LINE FILTER	2R2A752F28Y	TM101	076G0LH010	TRANSMITTER	EUR7613ZBOR
△ L503	028B270016	COIL,DEGAUSS	DYD1-5075-82	△ TU001	0163100017	RF UNIT	ENG36A29GF
L601	021LA6330J	COIL	33 UH	△ V801	098S270908	CRT WIDY	A68QCU770X66LRND
L801	02167F100J	COIL	10 UH	X101	100CT8R005	CRYSTAL	HC-49/U-S
L901	02167F101J	COIL	100 UH	X602	100CT3R505	CRYSTAL	HC-49/U
L1501	02167F101J	COIL	100 UH	RESISTOR RC..... CARBON RESISTOR CAPACITORS CC..... CERAMIC CAPACITOR CE..... ALUMI ELECTROLYTIC CAPACITOR CP..... POLYESTER CAPACITOR CPP..... POLYPROPYLENE CAPACITOR CPL..... PLASTIC CAPACITOR CMP..... METAL POLYESTER CAPACITOR CMPL..... METAL PLASTIC CAPACITOR CMPP..... METAL POLYPROPYLENE CAPACITOR			
L1502	02167F220J	COIL	22 UH				
L1503	021LA6100J	COIL	10 UH				
L1504	021LA6150J	COIL	15 UH				
L1505	02167F220J	COIL	22 UH				
T401	0450190171	TRANS,HORIZONTAL DRIVE	ETH19Y206AY				
△ T501	0481400744	TRANSFORMER,SWITCHING	81400744				
JACKS							
J701	060J431020	RCA JACK	MSP-213V2-432_NI_LF				
J702	063Q700011	JACK	YKF51-5503N				
J704	060J411032	RCA JACK	MSP-213V1-652_NI_LF				
J705	060J401104	RCA JACK	MTJ-032-03A-30FE				
J706	060J401106	RCA JACK	MTJ-032-03A-32FE				
J707	060J401105	RCA JACK	MTJ-032-03A-31FE				
△ J801	066F130021	SOCKET,CATHODE RAY,TUBE	ISHS62S				
SWITCHES							
SW101	0504101T34	SWITCH,TACT	EVQ21505R				
SW102	0504101T34	SWITCH,TACT	EVQ21505R				
SW103	0504101T34	SWITCH,TACT	EVQ21505R				
SW104	0504101T34	SWITCH,TACT	EVQ21505R				
SW105	0504101T34	SWITCH,TACT	EVQ21505R				
VARIABLE RESISTORS							
VR401	V1163H3BTC	VOLUME,SEMI FIXED	EVNVCYAA03BE3				
VR502	V1163H4BTC	VOLUME,SEMI FIXED	EVNVCYAA03BE4				
P.C.BOARD ASSEMBLIES							
PCB070	A3T0106070	PCB ASSY	CME021A				
PCB110	A3T0026110	PCB ASSY	CCE018A				
PCBD80	A3T0026D80	PCB ASSY	CEE044A				
MISCELLANEOUS							
B501	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0				
B504	024HT03553	CORE,BEADS	W5RH3.5X5X1.0				
B851	024HT03553	CORE,BEADS	W5RH3.5X5X1.0				
B852	024HT03553	CORE,BEADS	W5RH3.5X5X1.0				
B853	024HT03553	CORE,BEADS	W5RH3.5X5X1.0				
B1502	024HT03553	CORE,BEADS	W5RH3.5X5X1.0				
BT001	141L003010	BATTERY,MANGAN	R6P(AR)XICI				
BT002	141L003010	BATTERY,MANGAN	R6P(AR)XICI				
△ CD501	1209615905	CORD,AC BUSH	9615905				
CD801	WCL6842038	FLAT CABLE AWM2468 A	WG26 5C GRAY 420MM				
CD801	06CH823004	CORD,CONNECTOR	CH823004				
CD802	WEL6854038	FLAT CABLE AWM2468 A	WG26 7C GRAY 540MM				
CD851	WBL6048038	FLAT CABLE AWM2468 A	WG26 4C BLACK 480MM				
CD852	06CU232001	CORD,CONNECTOR	CU232001				
CP101	069S270639	CONNECTOR PCB SIDE	A2001WR2-7P				
△ CP401	069X460109	CONNECTOR PCB SIDE	B06B-DVS-L (LF)				
△ CP501	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD				
△ CP502	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P				
CP507	069W01001A	CONNECTOR PCB SIDE	003P-2100				
CP509	069W01001A	CONNECTOR PCB SIDE	003P-2100				
CP803	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P				
CP806	069W010010	CONNECTOR PCB SIDE	005P-2100				
CD1001	06C314A002	CORD,CONNECTOR	C314A002				
CP1001	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P				
CP801A	067U005049	WIRE HOLDER	B2013H02-5P				
CP801B	067U005049	WIRE HOLDER	B2013H02-5P				
CP802A	067U007029	WIRE HOLDER	B2013H02-7P				
CP802B	067U007029	WIRE HOLDER	B2013H02-7P				
CP851A	067U004029	WIRE HOLDER	B2013H02-4P				
CP851B	067U004029	WIRE HOLDER	B2013H02-4P				
CP852A	069S230629	CONNECTOR PCB SIDE	A2001WV2-3P				
CP852B	067U003029	WIRE HOLDER	B2013H02-3P				
EL0701	124116281A	EYE LET	XRY16X28BD				
EL0702	124120301A	EYE LET	XRY20X30BD				
△ F501	081PC6R305	FUSE	51MS063L				
△ FB401	043227025Y	TRANSFORMER,FLYBACK	BSC27-N2243				
FH501	06710T0009	HOLDER,FUSE	EYF-52BCY				
FH502	06710T0009	HOLDER,FUSE	EYF-52BCY				
OS101	0773071005	REMOTE RECEIVER	RPM7137-WH5				
△ RY501	0560X20118	RELAY	G5PA-1-SA(WEC)				

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